



# *California Statewide Groundwater Elevation Monitoring Program*

**Public Workshops  
January 2014**



**Association of  
California Water Agencies**

*Since 1910*

Leadership • Advocacy • Information • Service



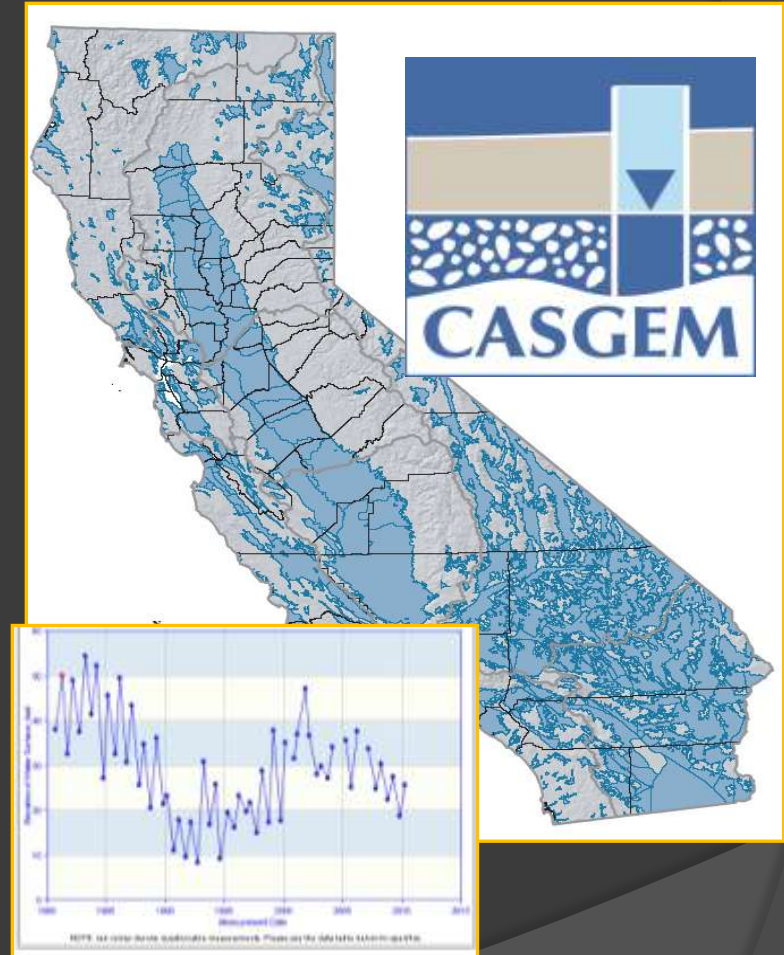
# OUTLINE

## ◎ CASGEM Overview

- Water 101
- Background
- Current Statistics
- Data
- Analysis

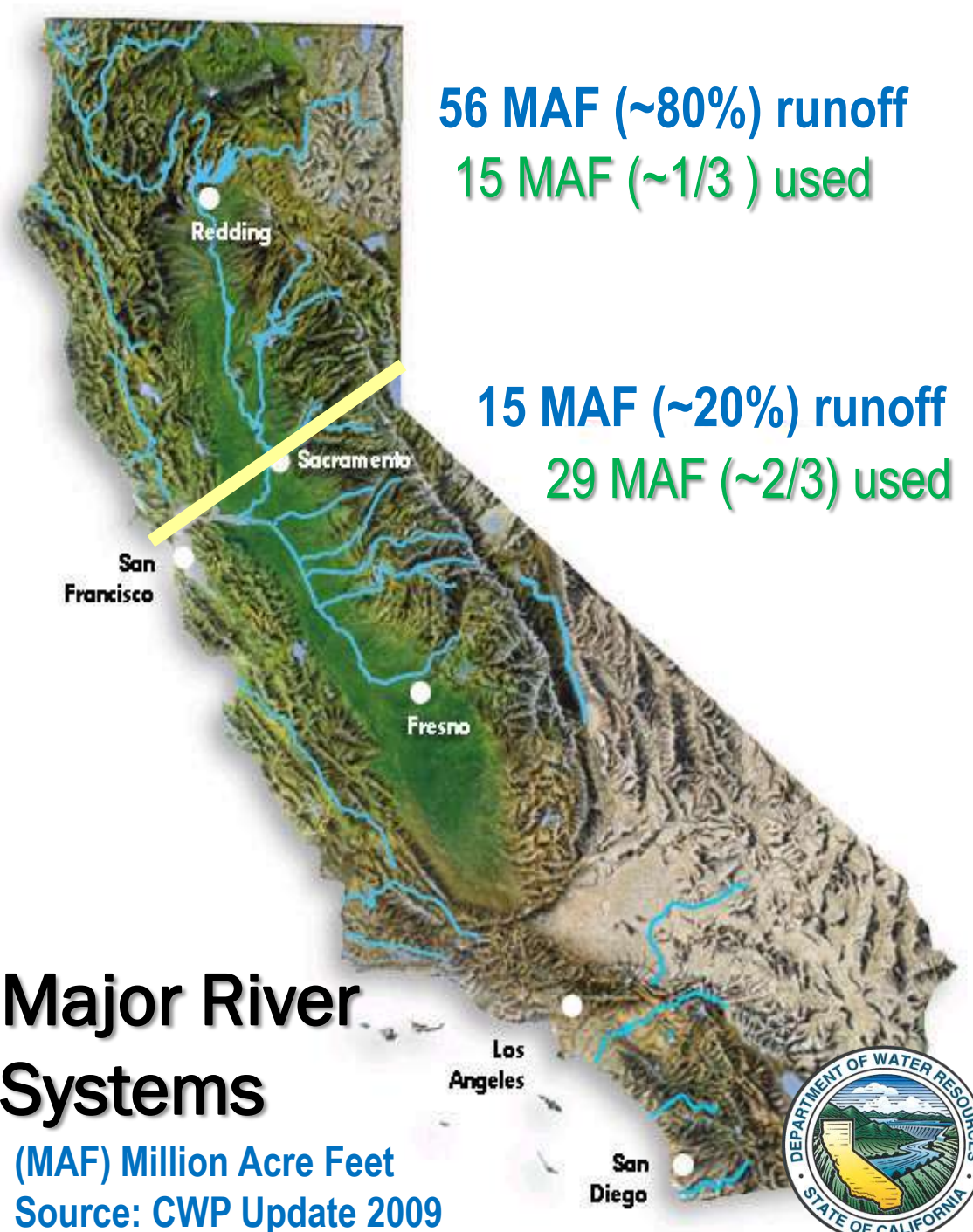
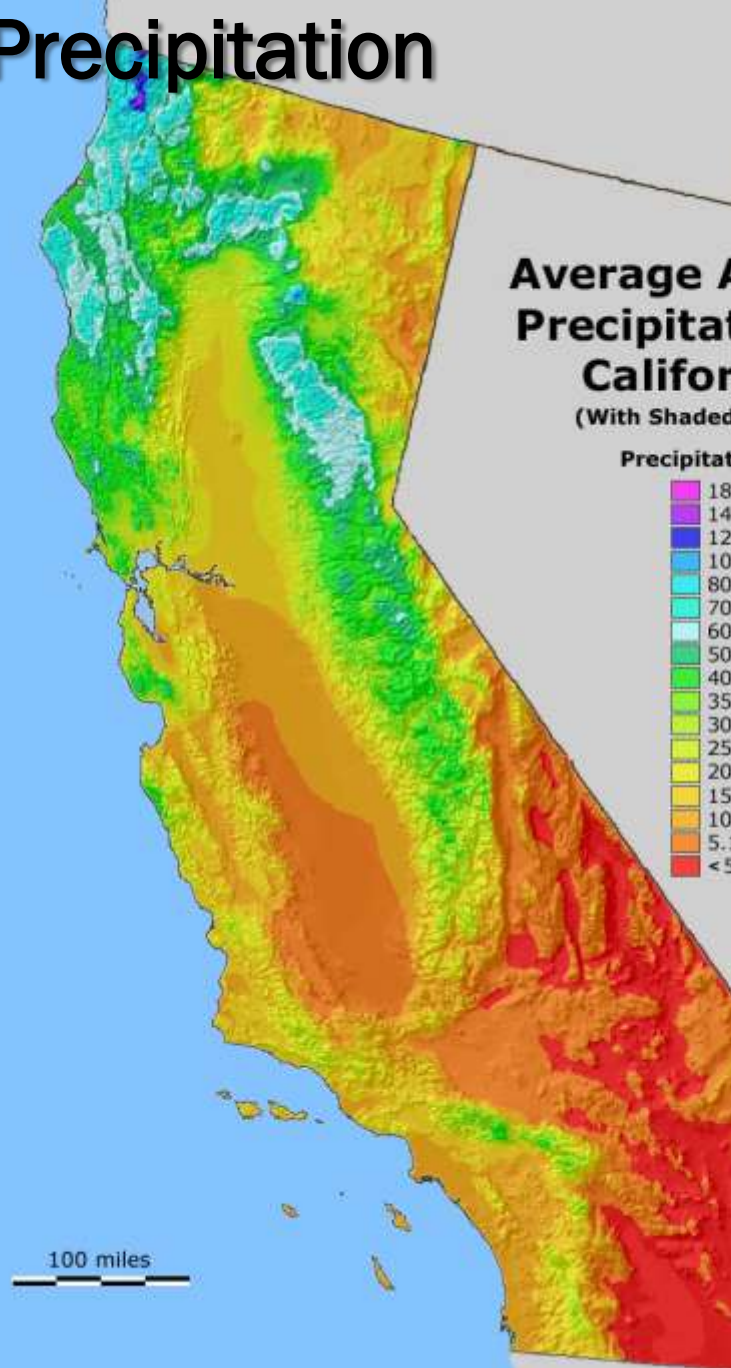
## ◎ Basin Prioritization

## ◎ Next Steps



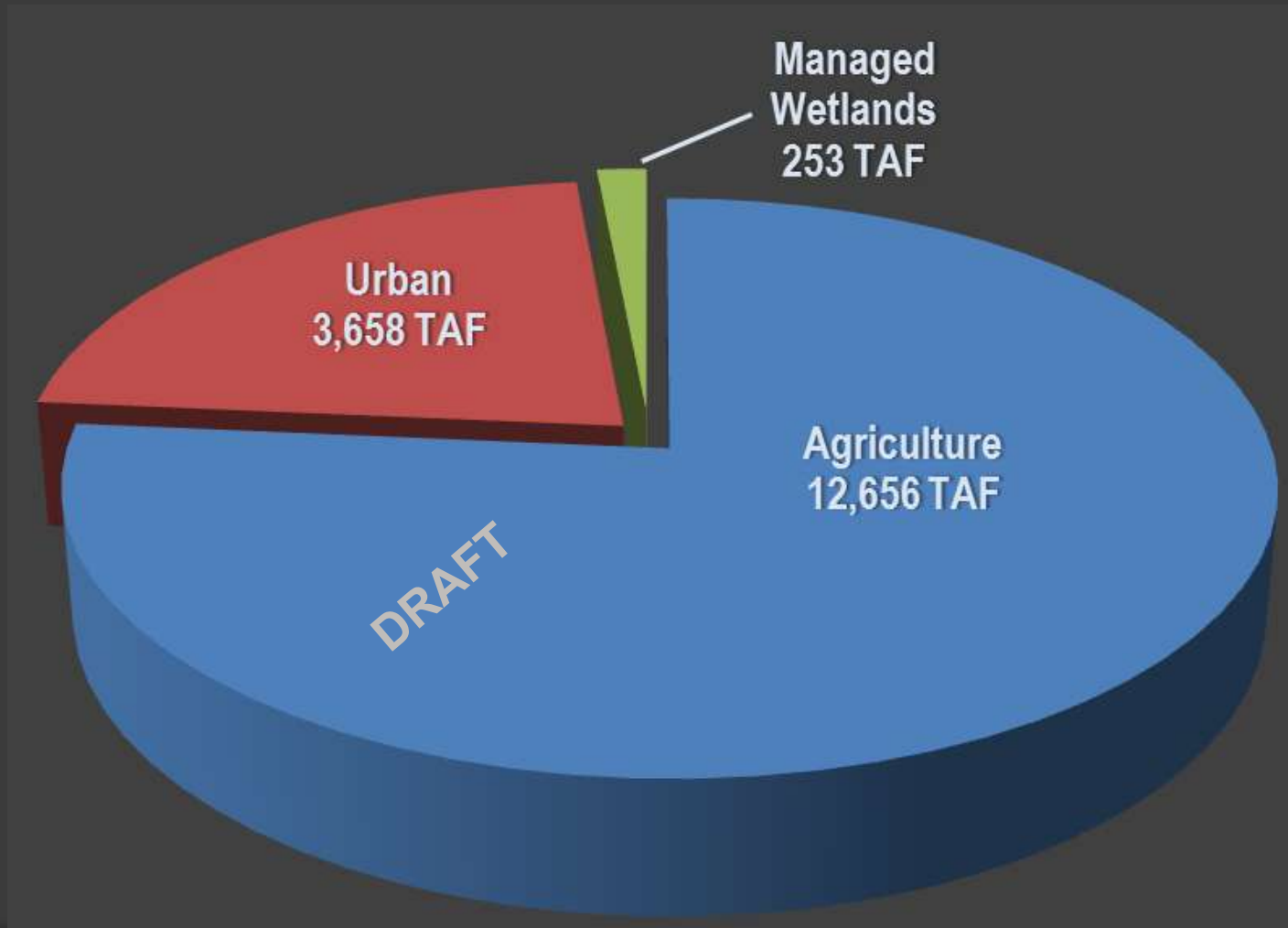


# Precipitation



# Statewide Groundwater Use

*2005-2010 Average Annual: 16,567 Thousand Acre Feet (TAF)*



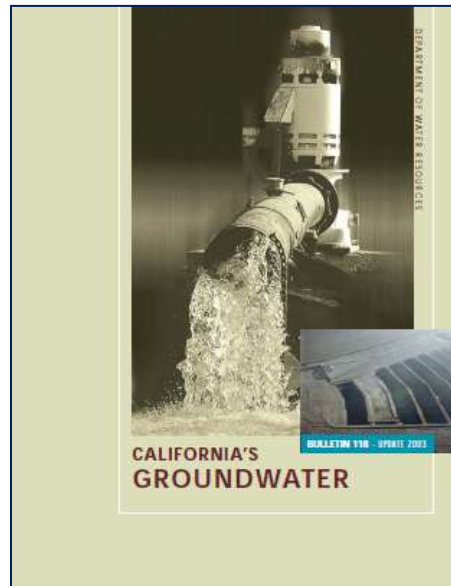
Source: California Water Plan Update 2013





# California's Groundwater Basins

- ▣ 515 alluvial basins/subbasins
- ▣ ~ 30 to 45 % of state's water supply
- ▣ Basins, precipitation, population, and demands are not evenly distributed



0 40 80 Miles

Source: DWR's Bulletin 118, update 2003



# Background



## 2009 COMPREHENSIVE WATER PACKAGE

### SPECIAL SESSION POLICY BILLS AND BOND SUMMARY





# Groundwater Monitoring Bill

**Senate Bill x7-6, CWC 10920 et seq.  
(effective Jan. 2010)**

- **Established a voluntary Statewide groundwater monitoring program**
  - **“Monitoring Entities” will regularly and systematically monitor and report groundwater elevations to demonstrate seasonal and long-term trends**
  - **Groundwater data is “readily and widely available” to the public**







# Program Overview

## ◎ CASGEM Program

- Collaboration between DWR and local agencies
- Collection of groundwater elevation data by agencies
- Data are readily and widely available to the public
- Basin prioritization and evaluation by DWR
- DWR prepares report for the Governor and Legislature

[www.water.ca.gov/groundwater/casgem](http://www.water.ca.gov/groundwater/casgem)







# Amendment to CWC

## **Assembly Bill 1152 (effective Jan. 2012)**

- ◎ **A local agency monitoring groundwater without GWMP can be monitoring entity**
  - Required adoption of a GWMP by Jan. 2014
  
- ◎ **Alternate monitoring – In basins where physical monitoring is impractical**
  - Groundwater levels unaffected by land use
  - Unusable groundwater
  - Inaccessible terrain





# Program Accomplishments

- ✓ Conducted outreach with local agencies
- ✓ Developed and implemented the online system
- ✓ Notifications from prospective monitoring entities began January 2011
- ✓ Groundwater elevation data submittal began by January 2012
- ✓ DWR completed report for the Governor and Legislature in January 2012
- ✓ Monitoring entities designated for basins/subbasins
- ✓ Addressed alternate monitoring where appropriate
- ✓ Groundwater elevation data continues to be uploaded





# Current Program Statistics

(as of Dec. 17, 2013)



- ◎ **473 Notifications of intent to monitor**
  - 395 basins/subbasins (or portion)
  - 124 unique agencies
- ◎ **200 Designated Notifications**
  - 152 basins/subbasins (or portion)
  - 71 Designated Monitoring Entities
- ◎ **3,700+ CASGEM wells (since 2012)**
- ◎ **100k records (includes historic data)**
- ◎ **273 Notifications in various degrees of progress**









# Online System

<http://www.water.ca.gov/groundwater/casgem>



DEPARTMENT OF  
WATER RESOURCES



**CASGEM**  
Online System

California Department of Water Resources

Log In

Username (Email) \*

Password \*

Login

[Forgot password?](#)

[Self Register](#)

[Back to Top](#) | [Help](#) | [Comments or Suggestions](#)

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11/17/2011



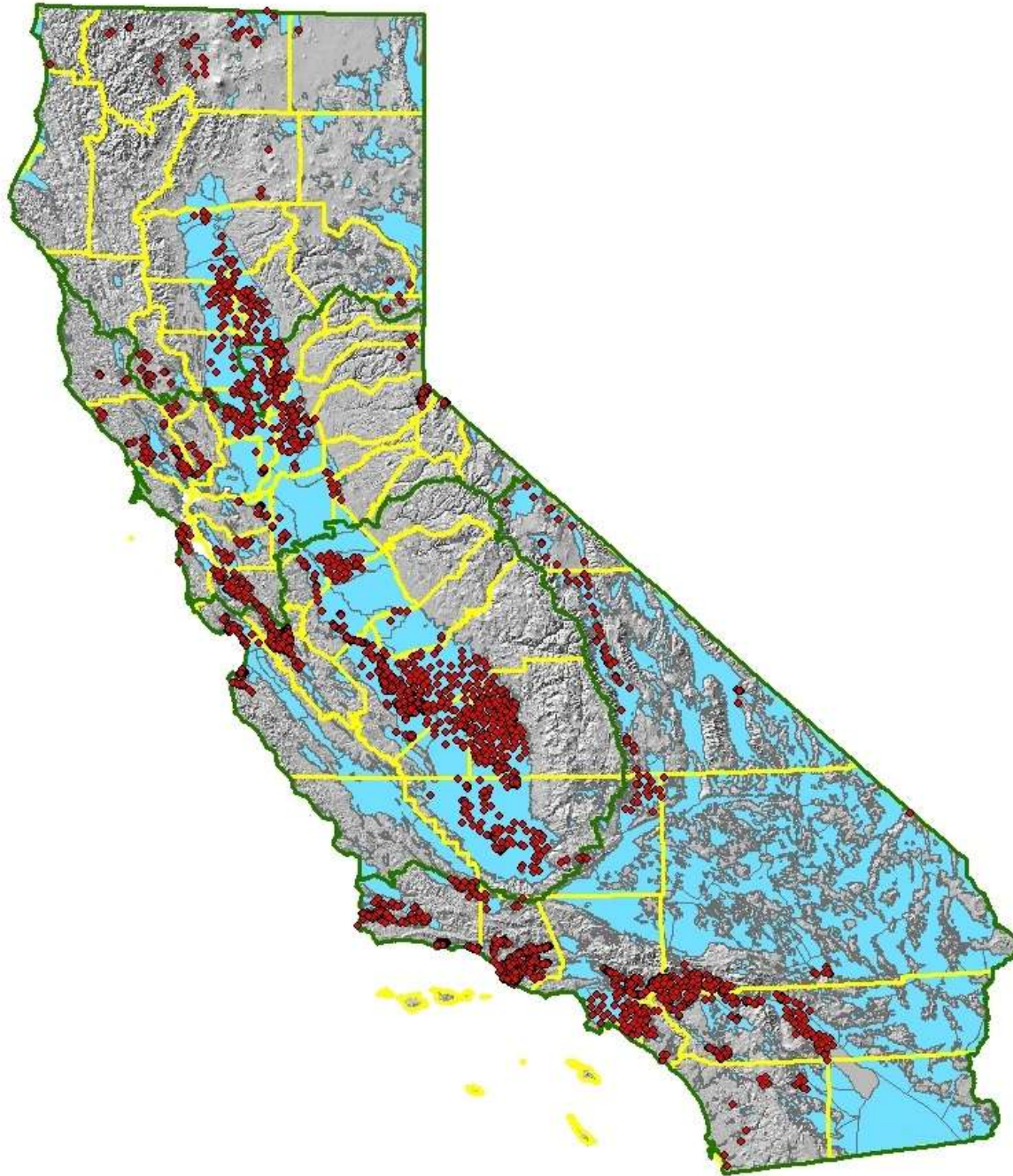


Areas  
Monitored by  
a Designated  
Monitoring  
Entity

as of  
December 2013





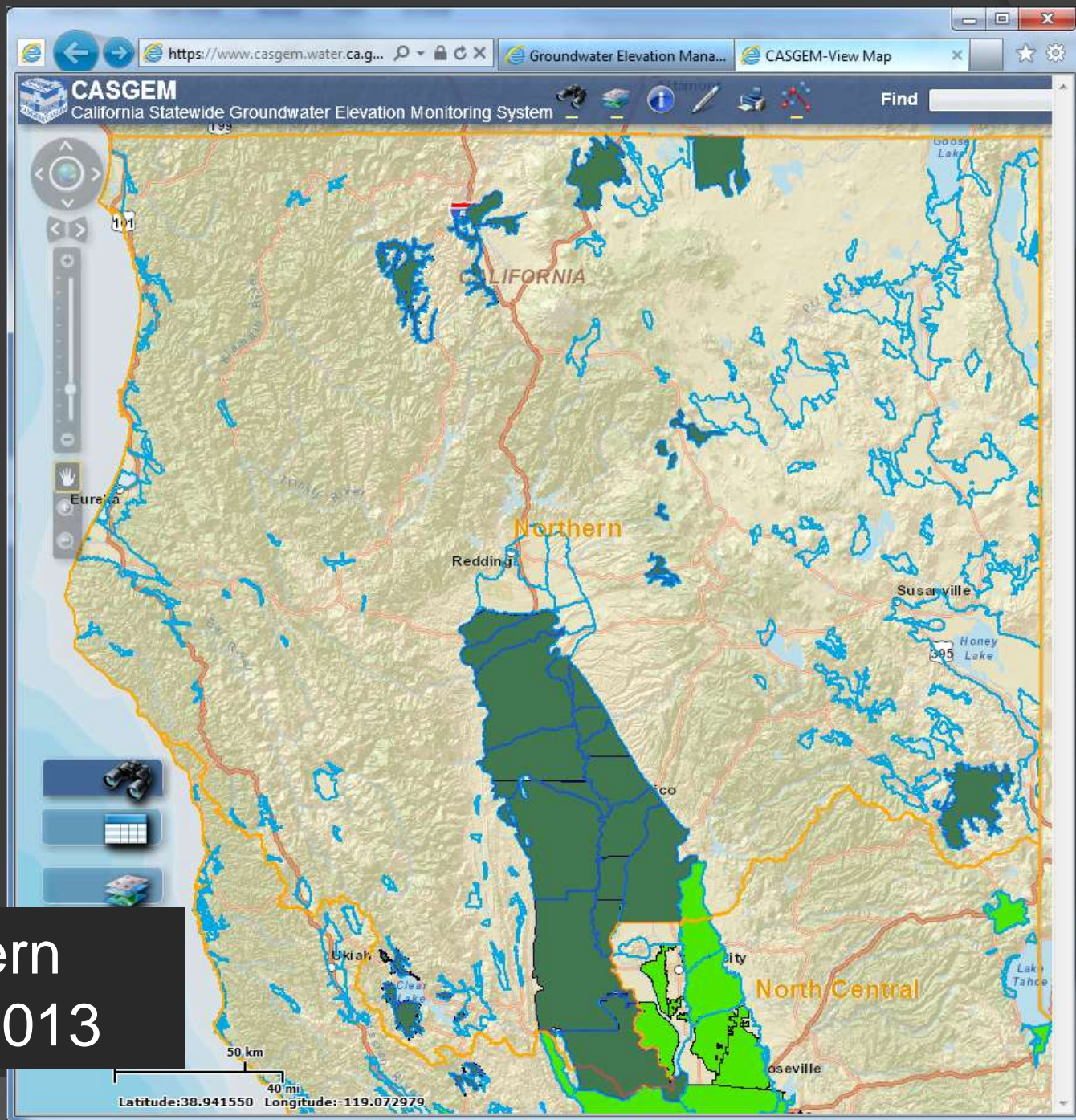


# CASGEM wells

as of December  
2013





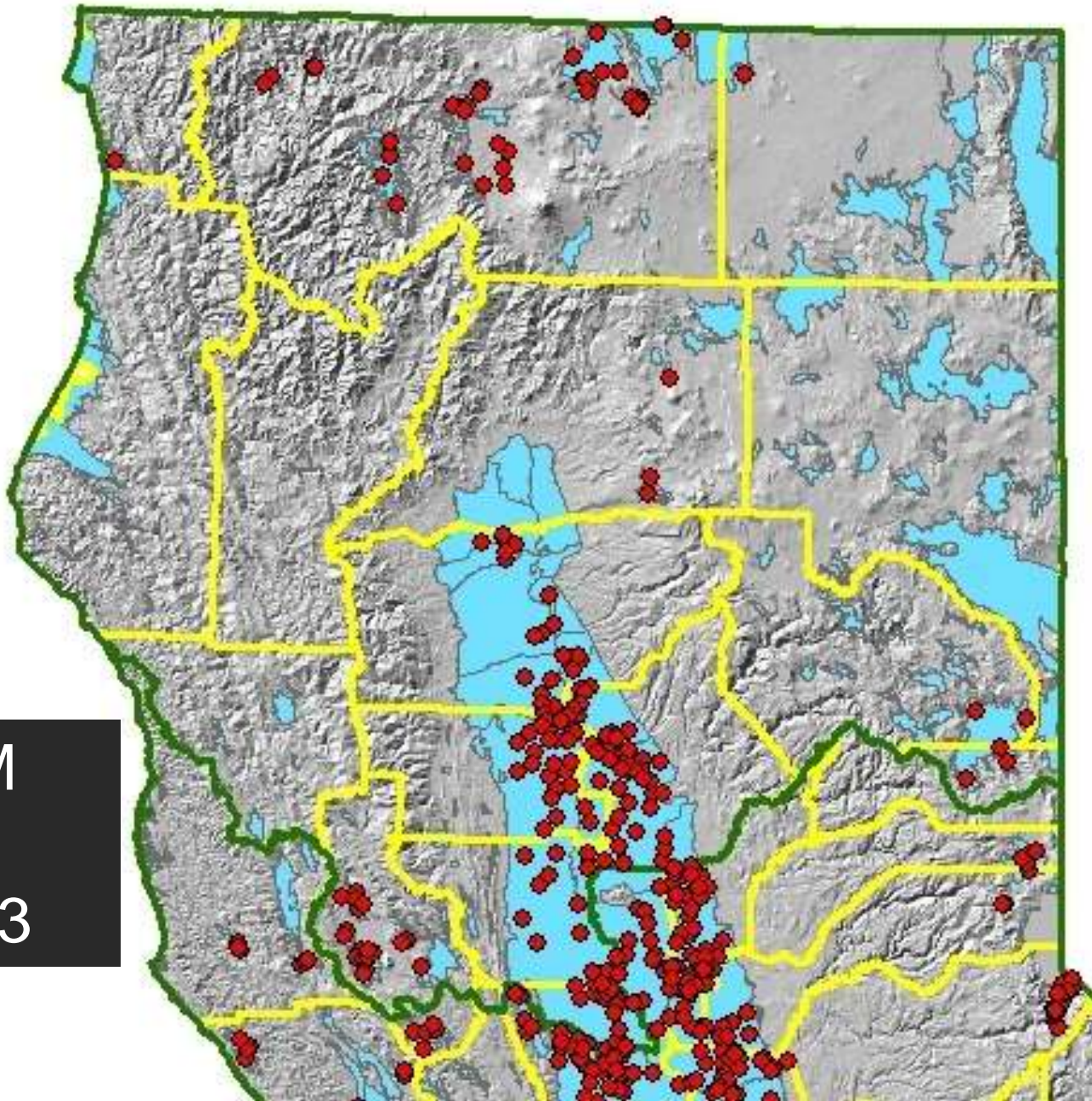


Northern  
Dec. 2013





CASGEM  
wells  
Dec. 2013



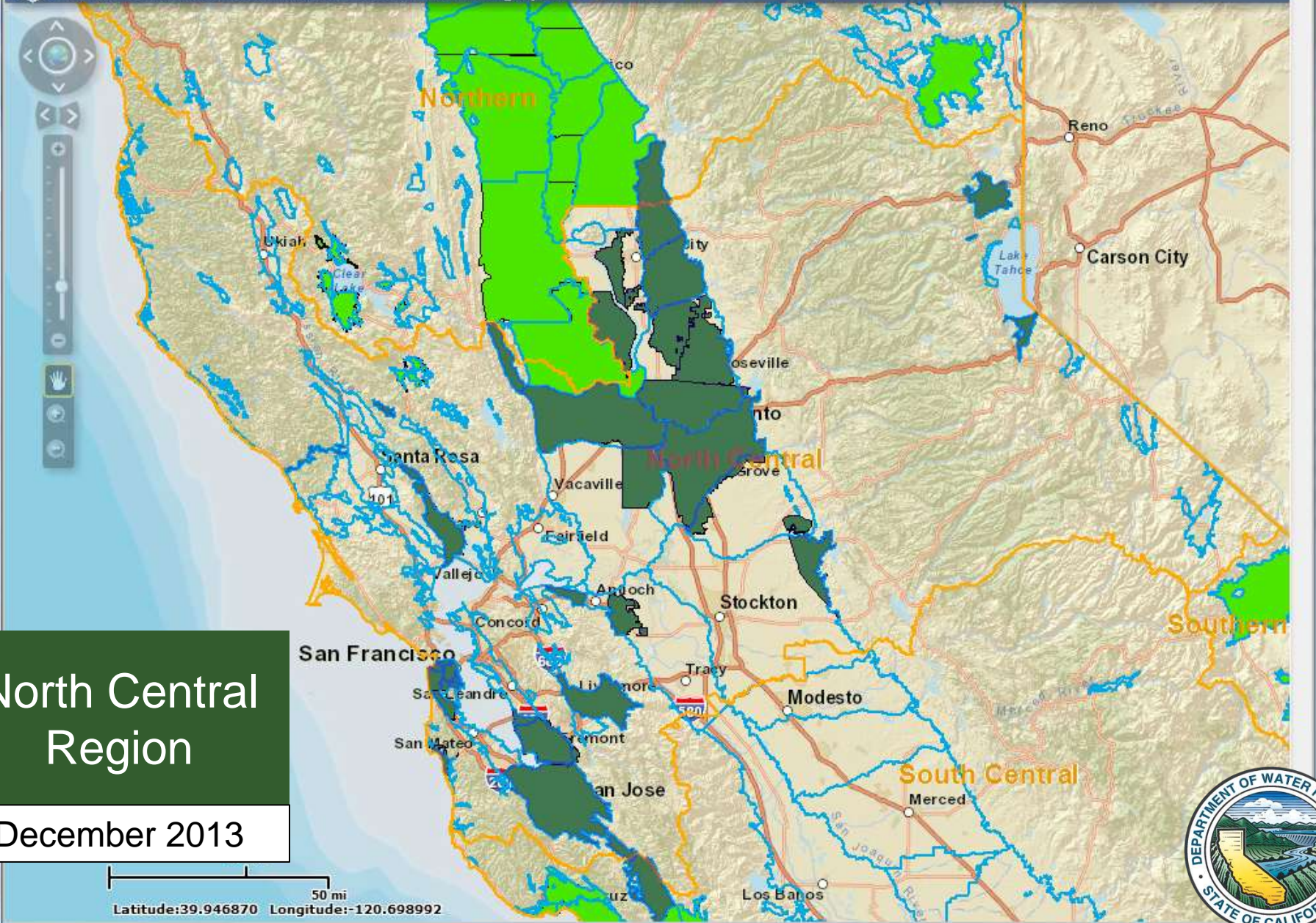


# Northern Region Statistics

- 134 basins/subbasins
- 148 Notifications submitted from 16 different agencies
- 39 basins/subbasins designated by 10 unique monitoring entities
- 30 basins fully monitored
- 109 Notifications in progress







North Central  
Region

December 2013





# North Central Region

December 2013



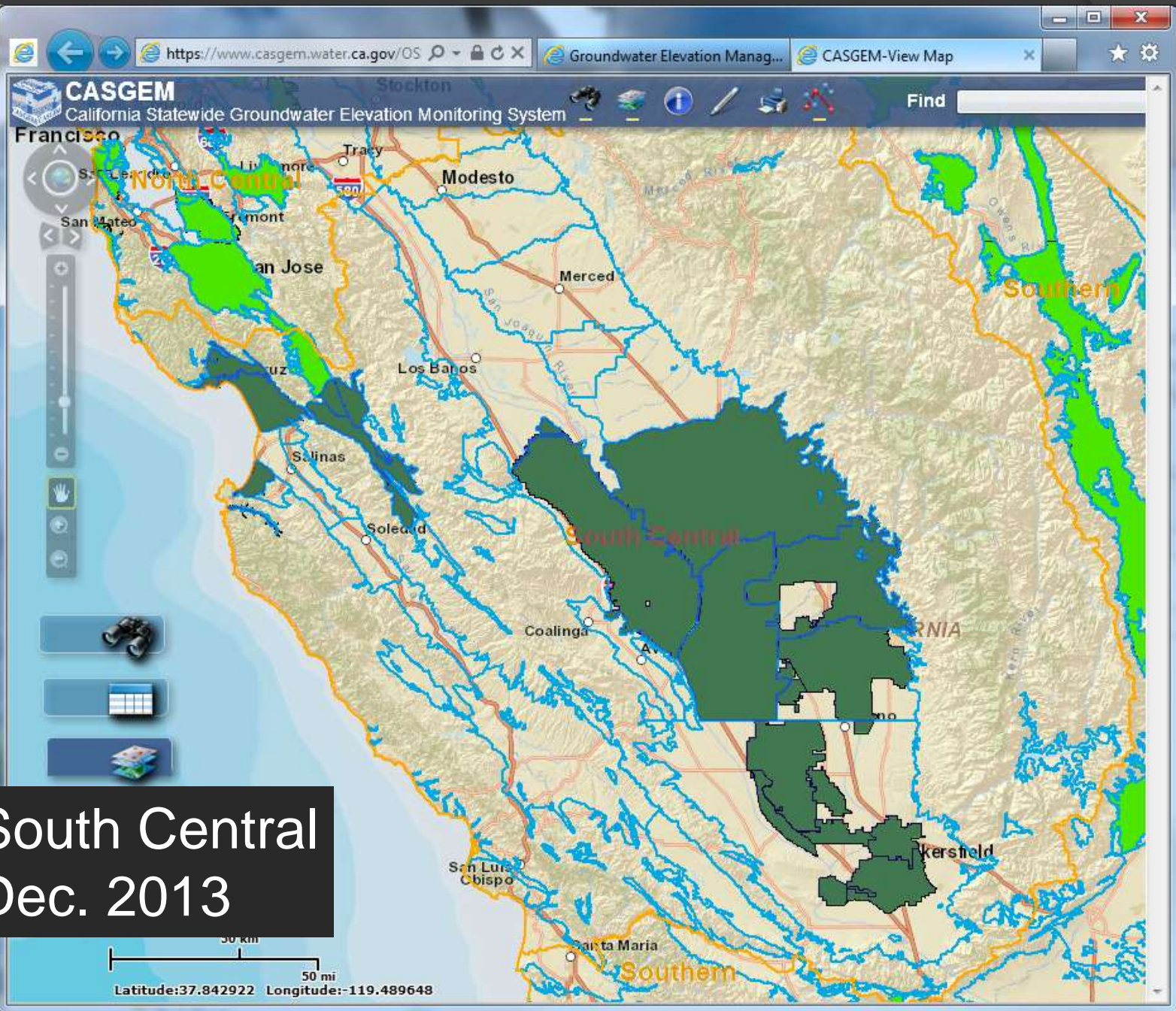


# North Central Region Statistics

- 82 basins/subbasins
- 81 Notifications submitted from 38 agencies
- 25 unique agencies Designated
- 38 basins/subbasins with Designated Monitoring Entity
- 20 basins fully monitored
- 43 Notifications in various degrees of progress



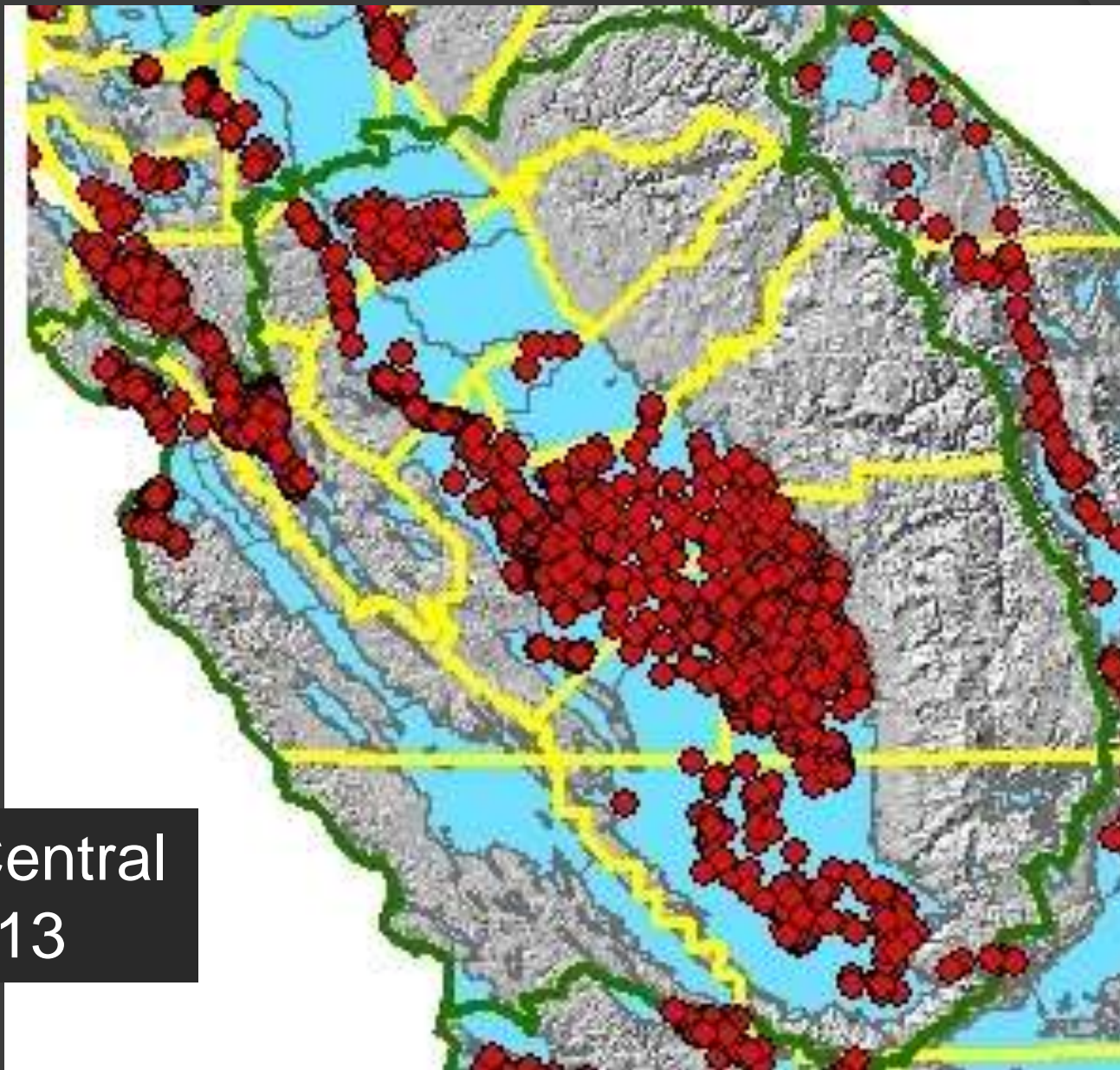




South Central  
Dec. 2013







South Central  
Dec. 2013



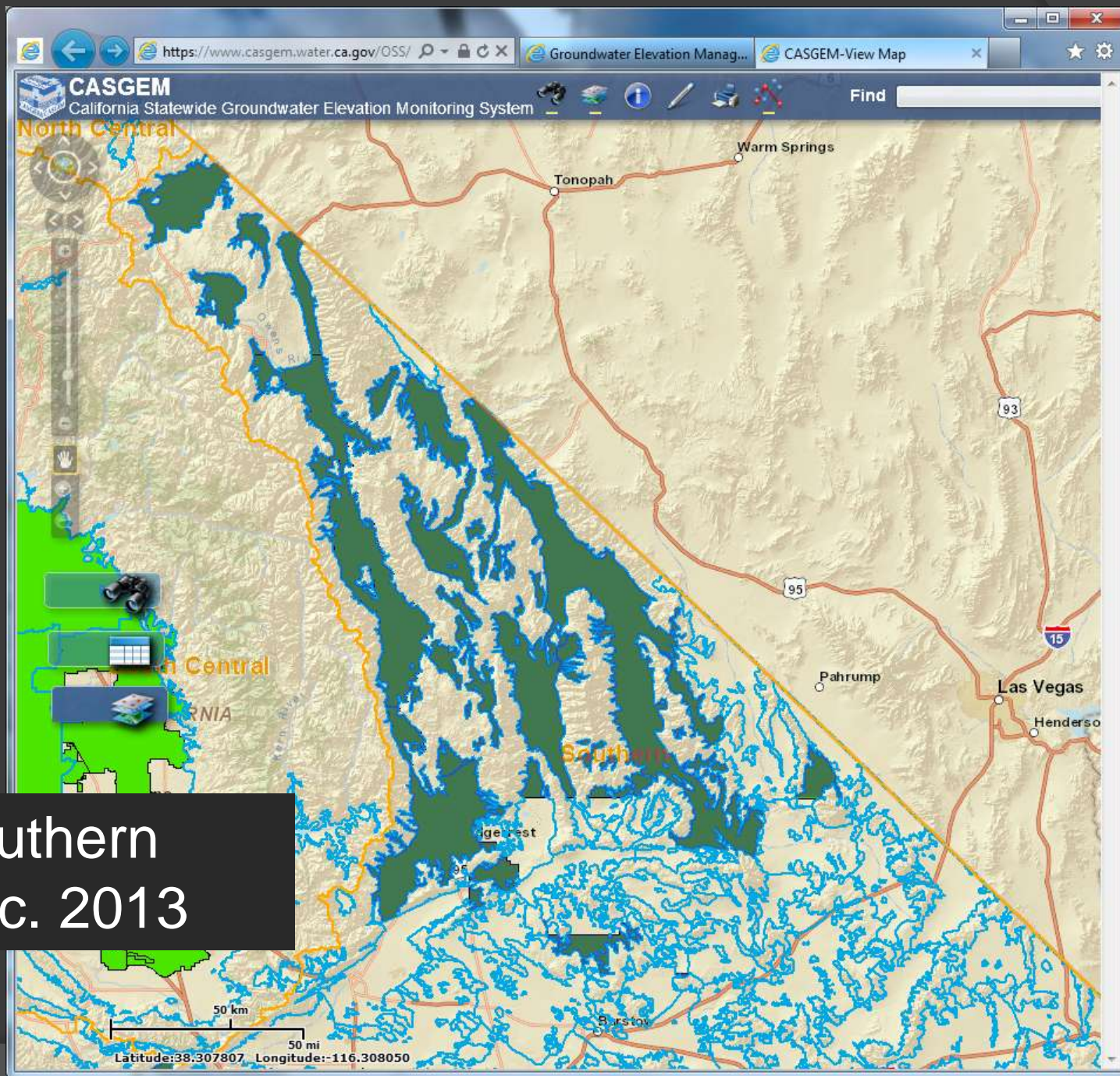


# South Central Region Statistics

- 76 basins/subbasins
- 91 Notifications submitted from 31 agencies
- 28 basins/subbasins with Designated Monitoring Entity
- 11 unique agencies
- 13 basins fully monitored
- 63 Notifications in progress





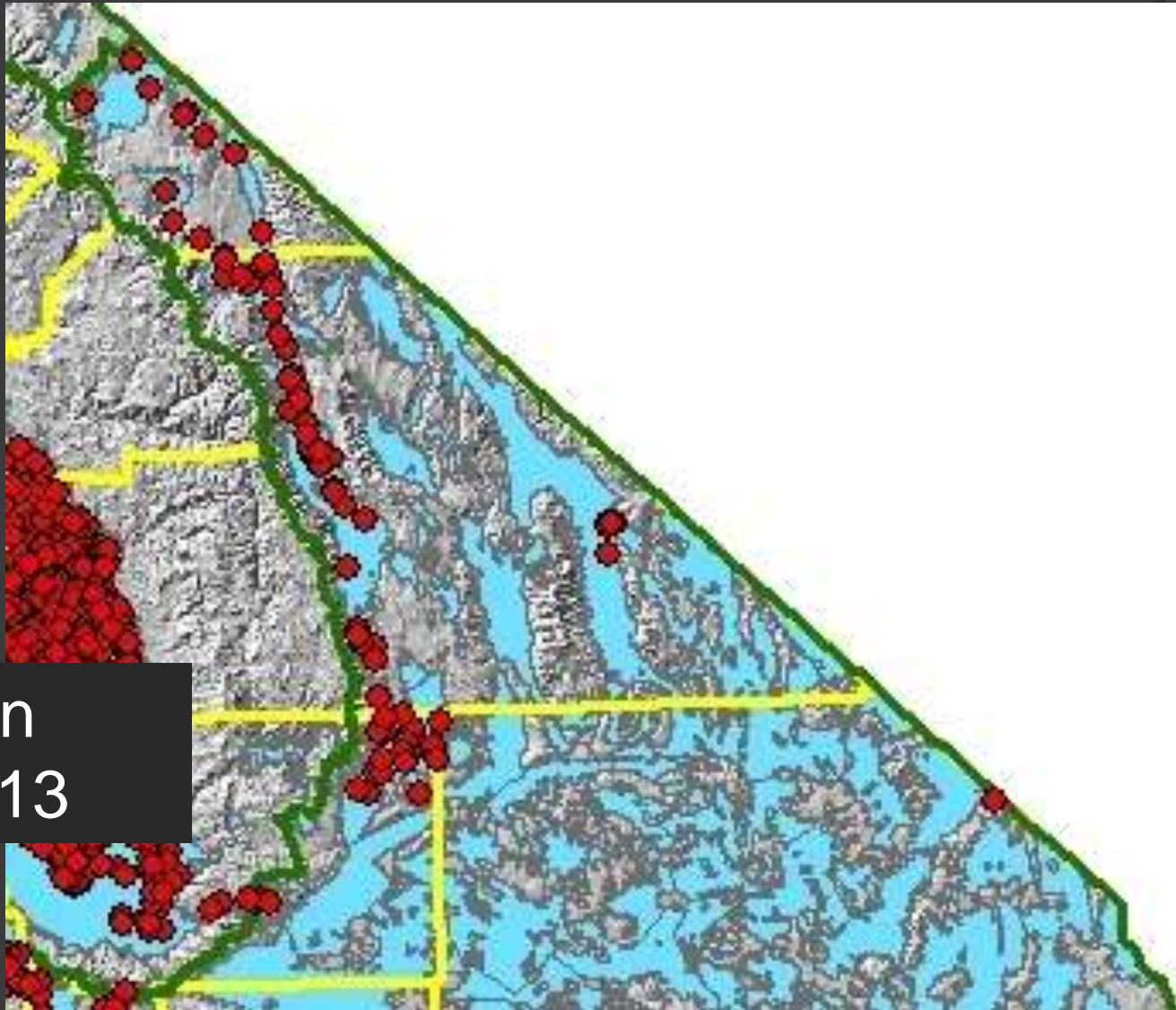


Southern  
Dec. 2013

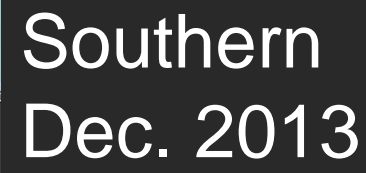




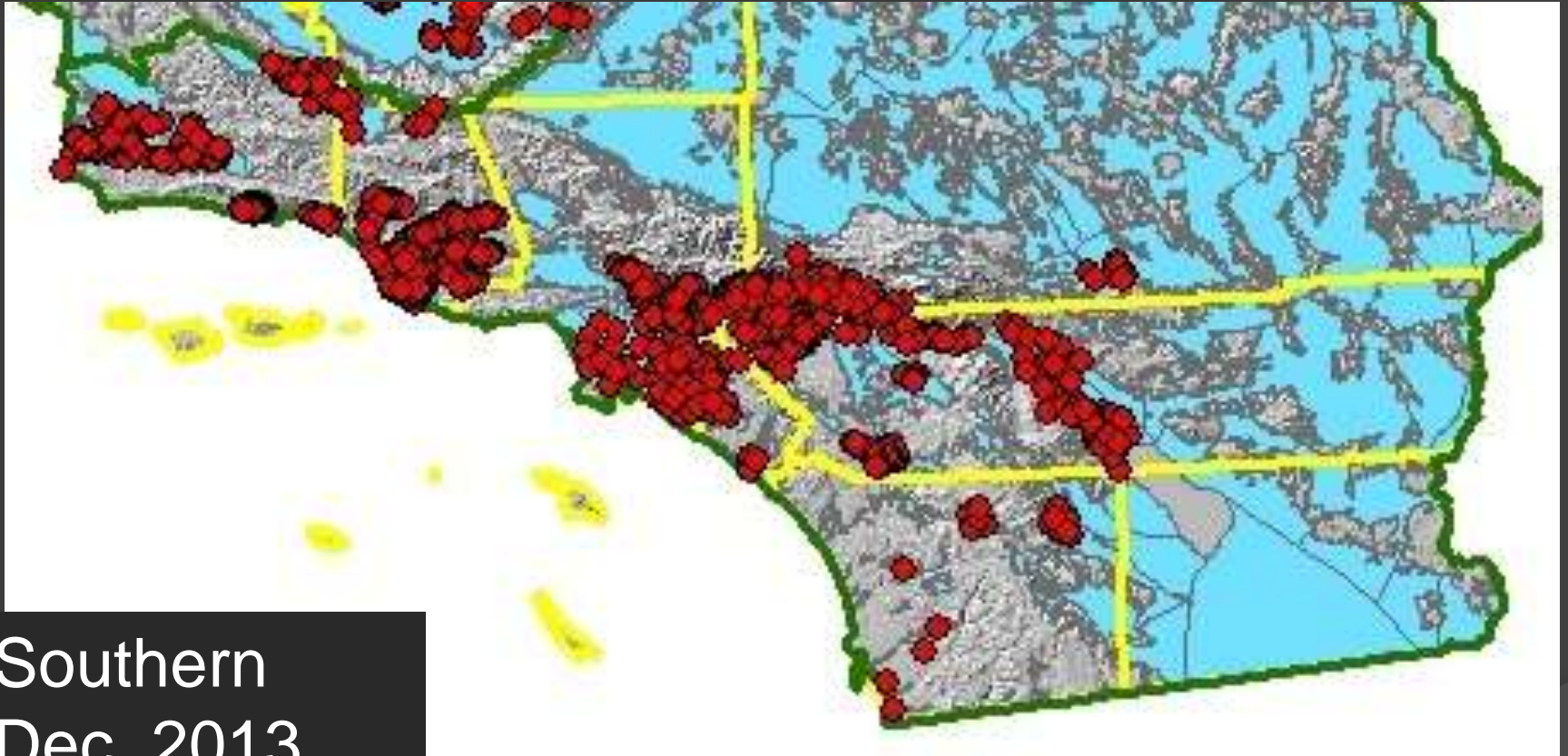
Southern  
Dec. 2013











Southern  
Dec. 2013







# Southern Region Statistics

- 223 basins/subbasins
- 152 Notifications submitted from 43 Agencies
- 95 basins/subbasins with Designated Monitoring Entity
- 27 unique agencies
- 67 basins fully monitored
- 57 Notifications in progress





# Implementation Challenges

- Funding
- Tight schedule
- B118 groundwater basins
- Voluntary participation
- Well availability/suitability
- Integrating WDL+CASGEM



# Water Data Library website

Water Data Library Home

CA.GOV | DEPARTMENT OF WATER RESOURCES

Home | Newsroom | Flood & Safety | Planning | State Water Project | Funding | Environment | Supply & Use | Data

CDEC | CIMIS | WDL | IEP | IWRIS | All Data Topics...

**DEVELOPMENT SITE**

- Water Data Library Home
- Groundwater Level Data
- Water Quality Data
- Continuous Data
- Historical Information
- Contact Information

**DWR CLIENTS ONLY**

- Admin Login
- Climate Data (Beta 1.1)
- Climate Data (Access Prototype)

**Water Data Library**

Use the map below to locate monitoring stations. You can find an area of interest if you zoom and pan the map. Quickly find an area searching for named features on a map such as the name of a city, park, landmark, lake, water feature, or zip code within California. Once at the area of interest, select the desired Site Type and click the "Refresh Map" button to show monitoring stations in the area. Additional searches by data type are possible by clicking the links on the left. For help on these and other ways to find your data [click here](#).

**WDL STATION MAP**


**Location Search**  
To find monitoring stations for a specific area, enter the placename or zip code into the text box below

**Site Type**  
Select the desired site type using the checkboxes:

- ☐ Groundwater Level
- ☐ Water Quality
- ☐ Include Historic Data
- ☐ Continuous Data
- ☐ Multi-parameter site
- ☐ Cluster, showing number of stations

**Cursor Coordinates (WGS84)**  
Lat: -120.362, Long: 39.204

Select Basemap



The map displays the state of California with various monitoring stations marked by colored dots. Major cities and regions are labeled, including Sacramento Valley, San Francisco, and Los Angeles. A scale bar at the bottom left indicates distances up to 30 miles. An inset map in the bottom right corner shows the location of the main map area within the state of California.







# CASGEM and Water Data Library

- CASGEM data is stored in an updated version of Water Data Library - Groundwater Elevation Module (WDL\_GW).
- CASGEM data is a subset of the Water Data Library. CASGEM data and WDL\_GW data are in the same database.
- Historical (pre-CASGEM) data (1.5M records) are being migrated into the updated (WDL\_GW) database. About 80% complete.





# CASGEM and Water Data Library

Websites

CASGEM OS  
website

Water Data Library  
website

ME Manages  
Notifications

ADD  
DATA

Databases

Groundwater  
LEVEL data collected by:

**DWR**  
**Other Cooperators**  
and **Monitoring Entities**

(WDL\_GW module)  
Includes historic data

Surface/Groundwater  
level and quality data  
from DWR  
continuous data  
loggers  
(HYDSTRA)

Surface and  
Groundwater  
Quality data  
from DWR Laboratory  
(WDL\_WQ Module)







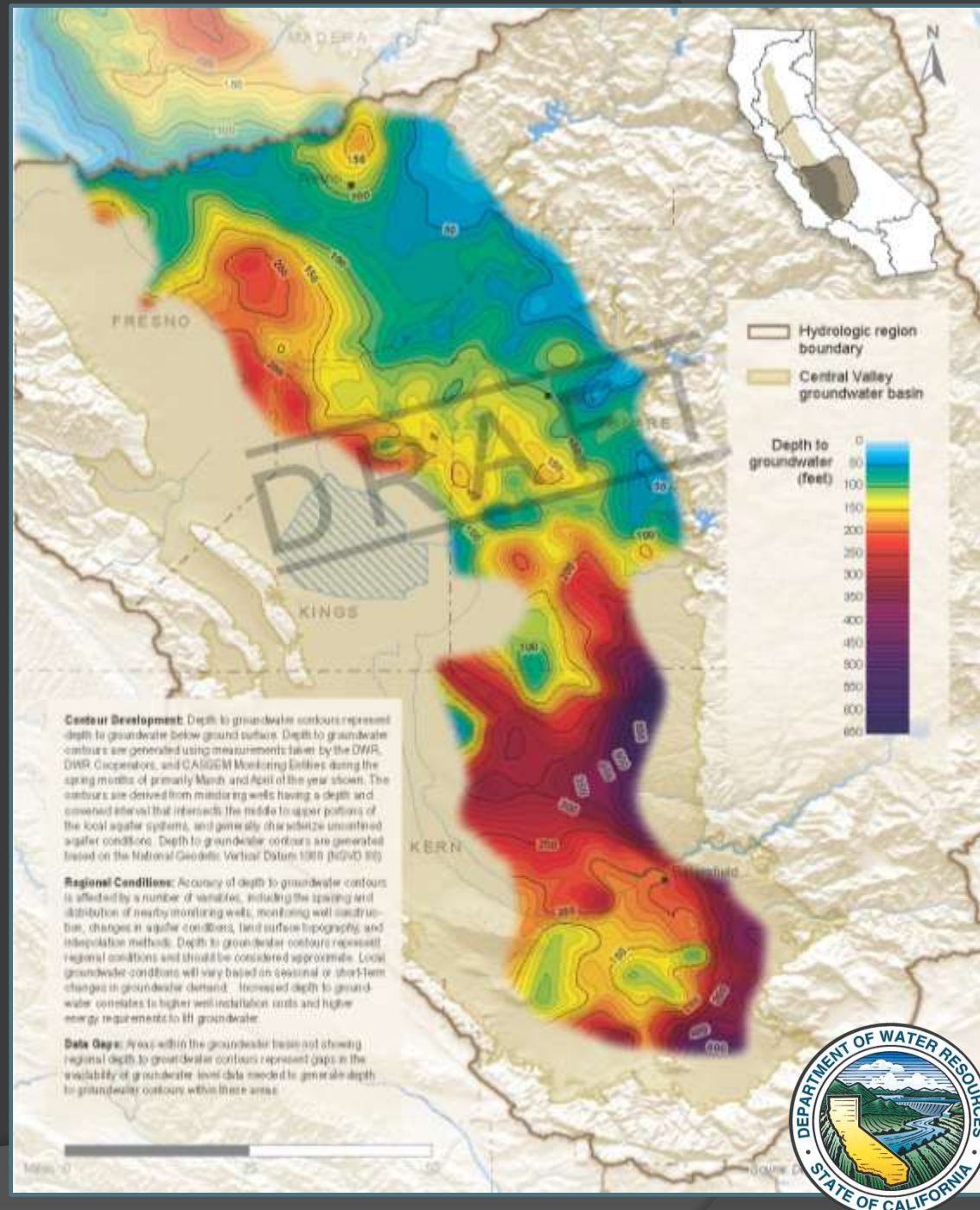
# Data Collection and Analysis

- ◎ Why is groundwater data important?
  - Evaluate groundwater levels and trends
  - Identify areas of depression/recharge
  - Baseline data is critical for evaluating groundwater basins
  - Assess impacts – land subsidence, overdraft, drought
  
- ◎ How does CASGEM help?
  - Consolidates groundwater elevation data for public access
  - Allows seasonal and year to year comparisons
  - Allows for collection and sharing of data in areas not previously monitored
  - CASGEM data complements existing dataset in WDL
  
- ◎ CASGEM wells include construction information
  - Allows for determination of aquifer zones
  - Allows evaluation of similar data (confined v. unconfined)
  - Allows for higher quality data analysis



# Tulare Lake Hydrologic Region

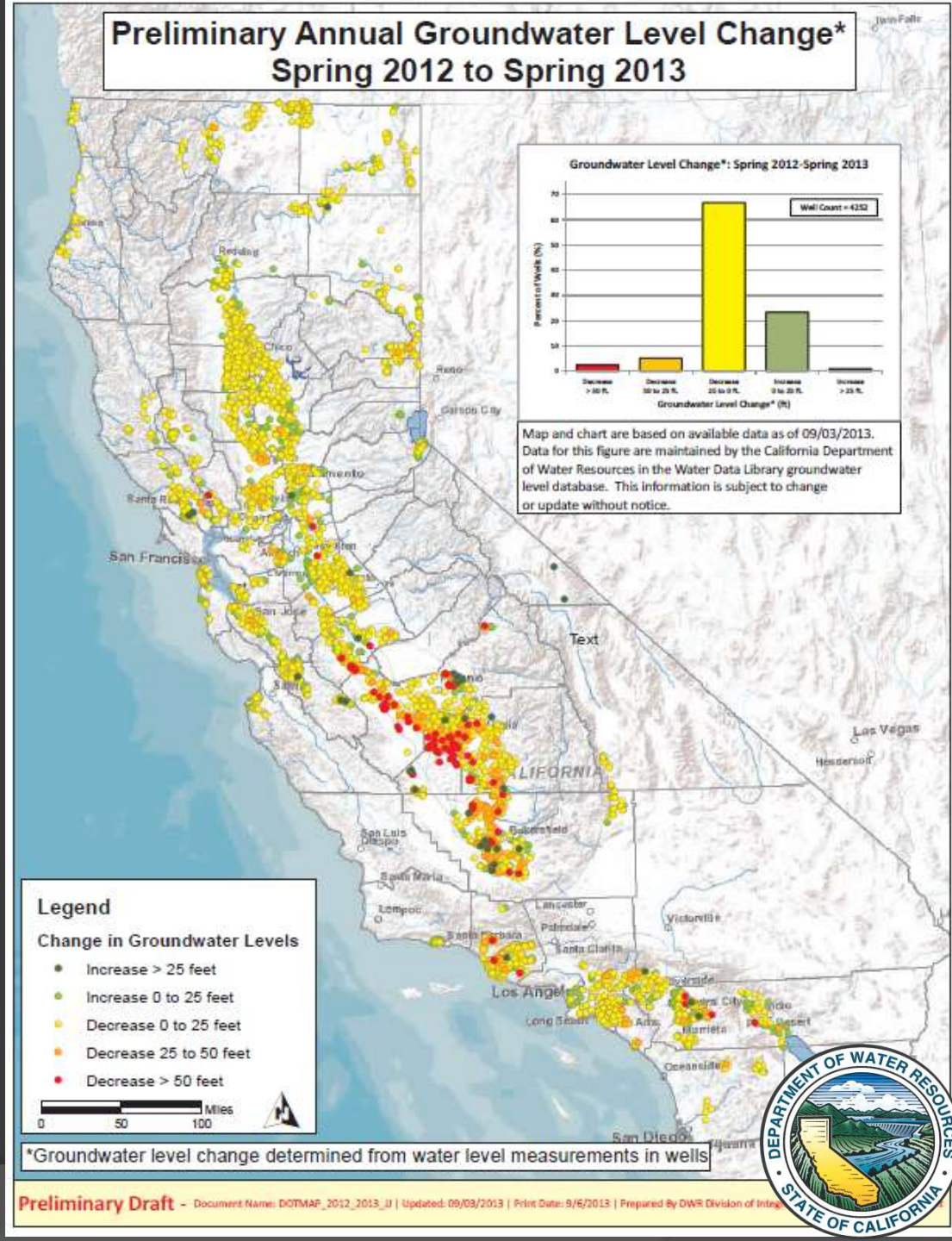
## Spring 2010 *Depth-to-Groundwater*





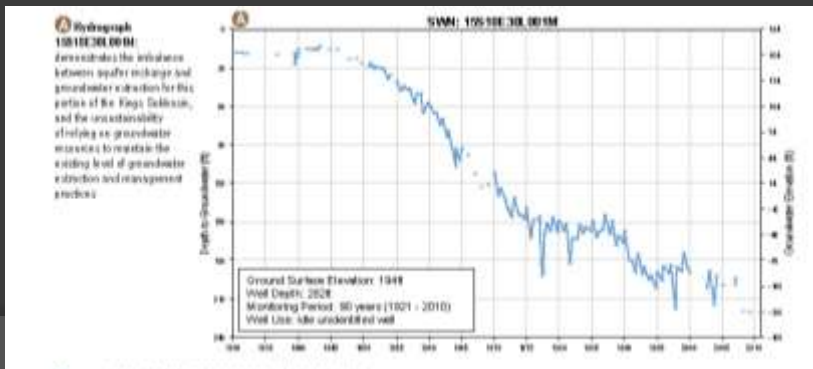
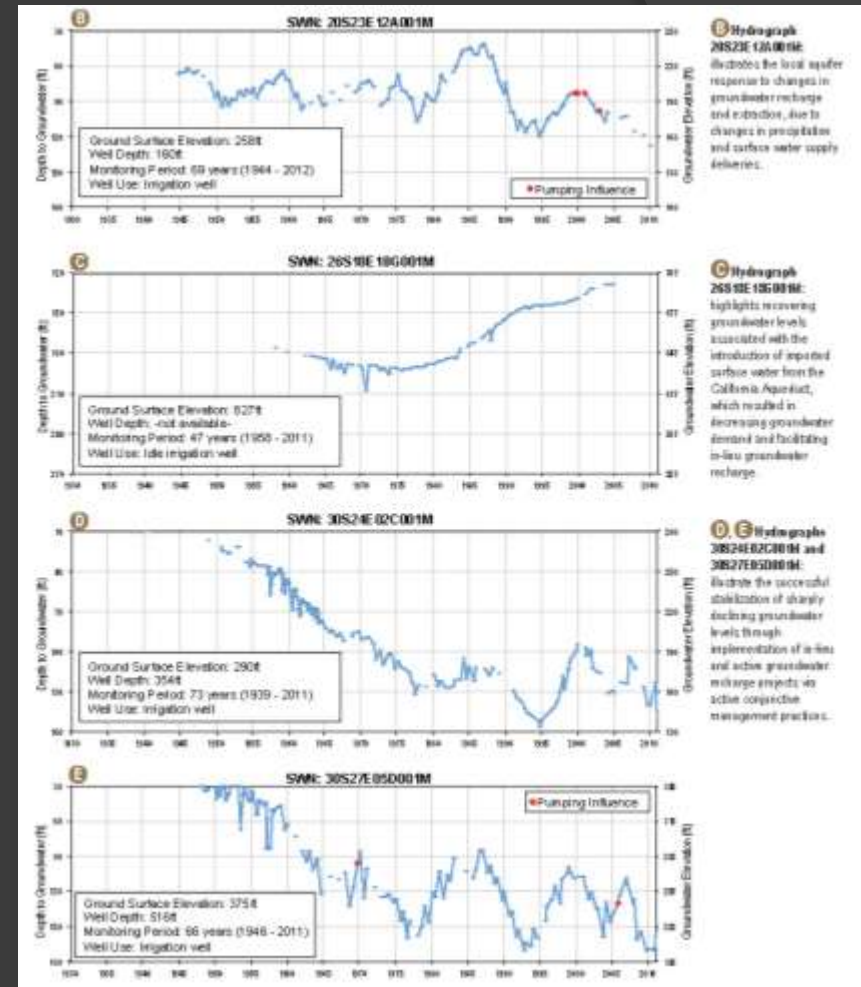
# Statewide Groundwater Level Change

Spring 2012 to Spring 2013



# Tulare Lake Region

# Regional Hydrographs





# Spring 2005-Spring 2010 Change in GW Storage

Sacramento River HR

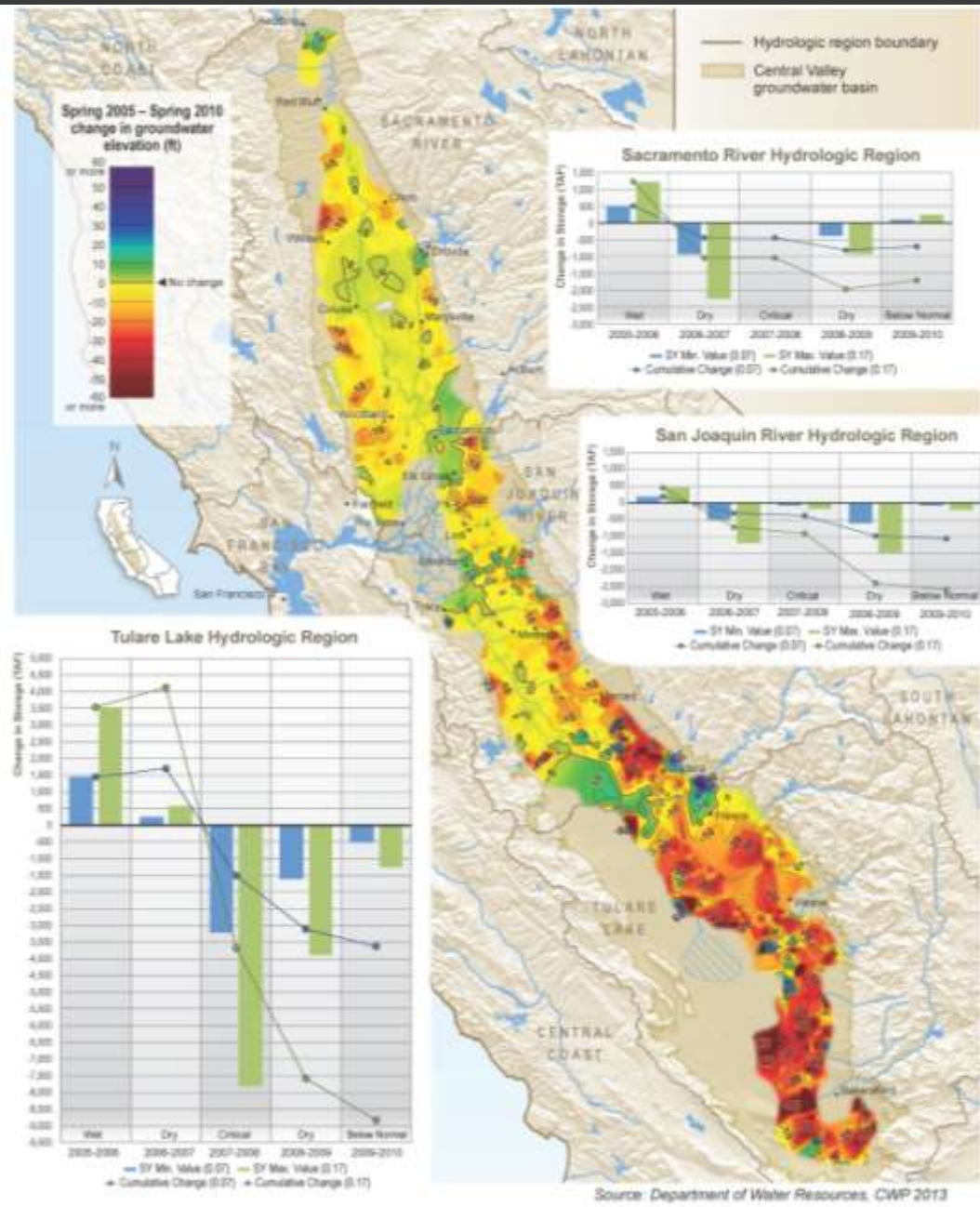
+

San Joaquin River HR

+

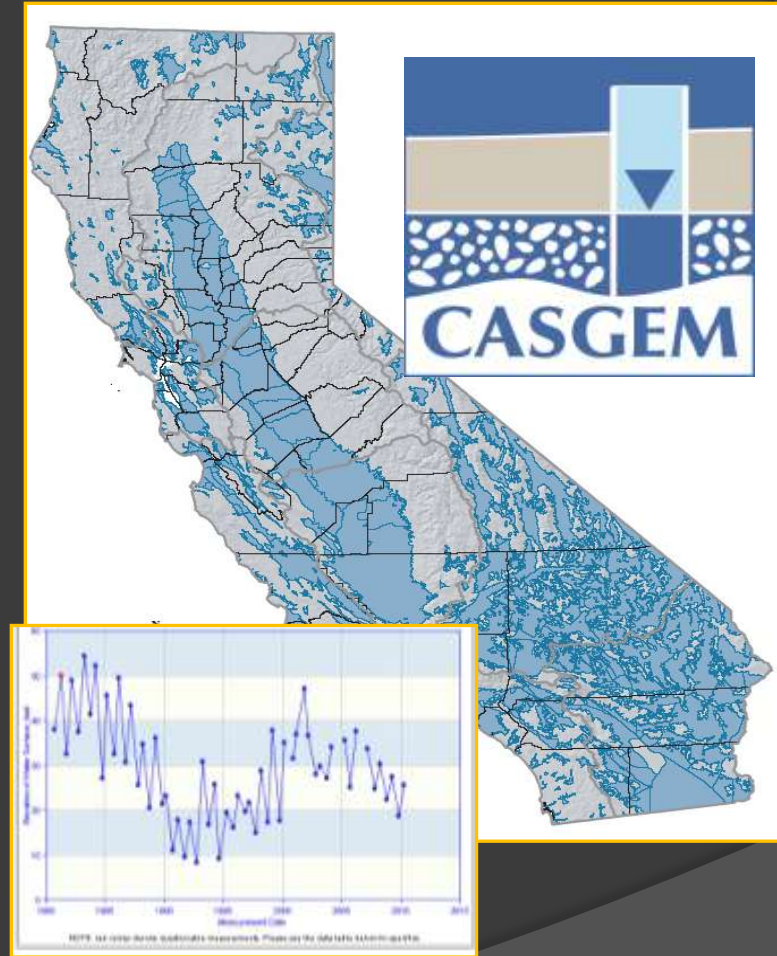
Tulare Lake HR

= approx. -5 to -13  
Million Acre feet (MAF)



# OUTLINE

- CASGEM Overview
- Basin Prioritization
- Next Steps





# CASGEM

## Basin Prioritization Process



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# CASGEM Statewide Basin Prioritization Process

CWC §10933

As part of the CASGEM Basin Prioritization Process, DWR is directed to consider, to the extent that it is available, *eight* Statewide data components:

1. Population
2. Population Growth
3. Number of Public Supply Wells
4. Total Number of Wells
5. Irrigated Acreage





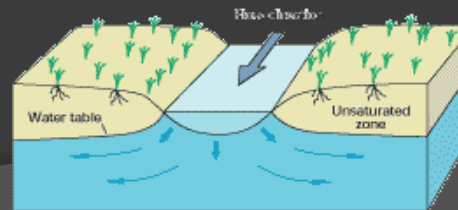


# CASGEM Basin Prioritization Process

CWC §10933

## Data components...continued

6. **Groundwater Reliance:** Volume and Percent (of overall supply),
7. **Documented Impacts:**
  - overdraft,
  - subsidence,
  - saline intrusion,
  - other types of groundwater quality issues
8. **“Other” Information:** Any other information determined to be relevant by the Department, i.e., sw-gw interaction.

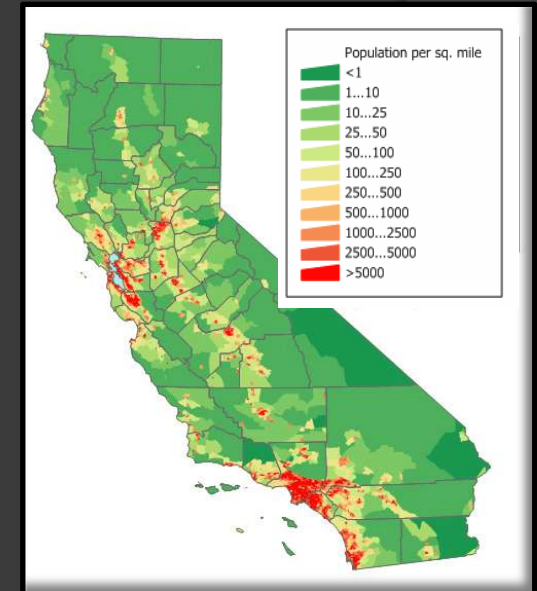


# Statewide Data Sources



## 1. Population Overlying the Basin:

**Source:** Dept. of Finance 2010 Census data processed by DWR demographic staff



## 2. Population Growth:

**Source:** DOF 2010 Census data projected to 2030, by DWR Demographics staff using a "*current trends*" for growth.

## 3. Number of Public Supply Wells:

**Source:** 2012 CA Dept. Public Health drinking water supply database





# Statewide Data Sources

## 4. Total Number of Wells:

**Source:** Estimated from DWR Well Log database.

## 5. Irrigated Acreage:

**Source:** Estimated from 2005 land use data developed by DWR and by the Department of Conservation's Farmland Mapping Program.

## 6. Groundwater Reliance:

**Source:** Estimated from 2005 land use data developed by DWR and the Department of Conservation.



# Statewide Data Sources



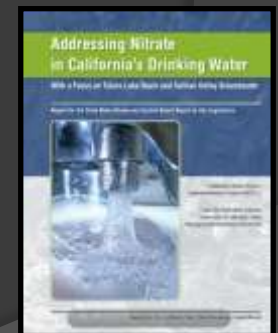
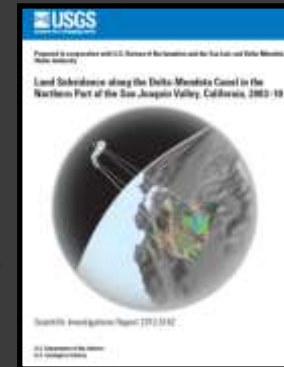
## 7. Documented Impacts:

**Source:** DWR Region office staff review of DWR Bulletin 118-2003, local groundwater management plans, or other readily available published information.



## 8. "Other" Information:

**Source:** DWR Region office staff review of DWR Bulletin 118-2003, local groundwater management plans, or other readily available published information.







# CASGEM Basin Prioritization Process

## Challenges:

- No GW Use Reporting for most CA Basins.
- GW Use is estimated from Land Use which is compiled by Detailed Analysis Units (DAUs).



278 DAUs



515 Basins/Subbasins

***Initial Step: Translate gw use data from DAUs to GW Basins.***



***Initial Steps: Translate GW Use by DAU to GW Use by GW Basin.***

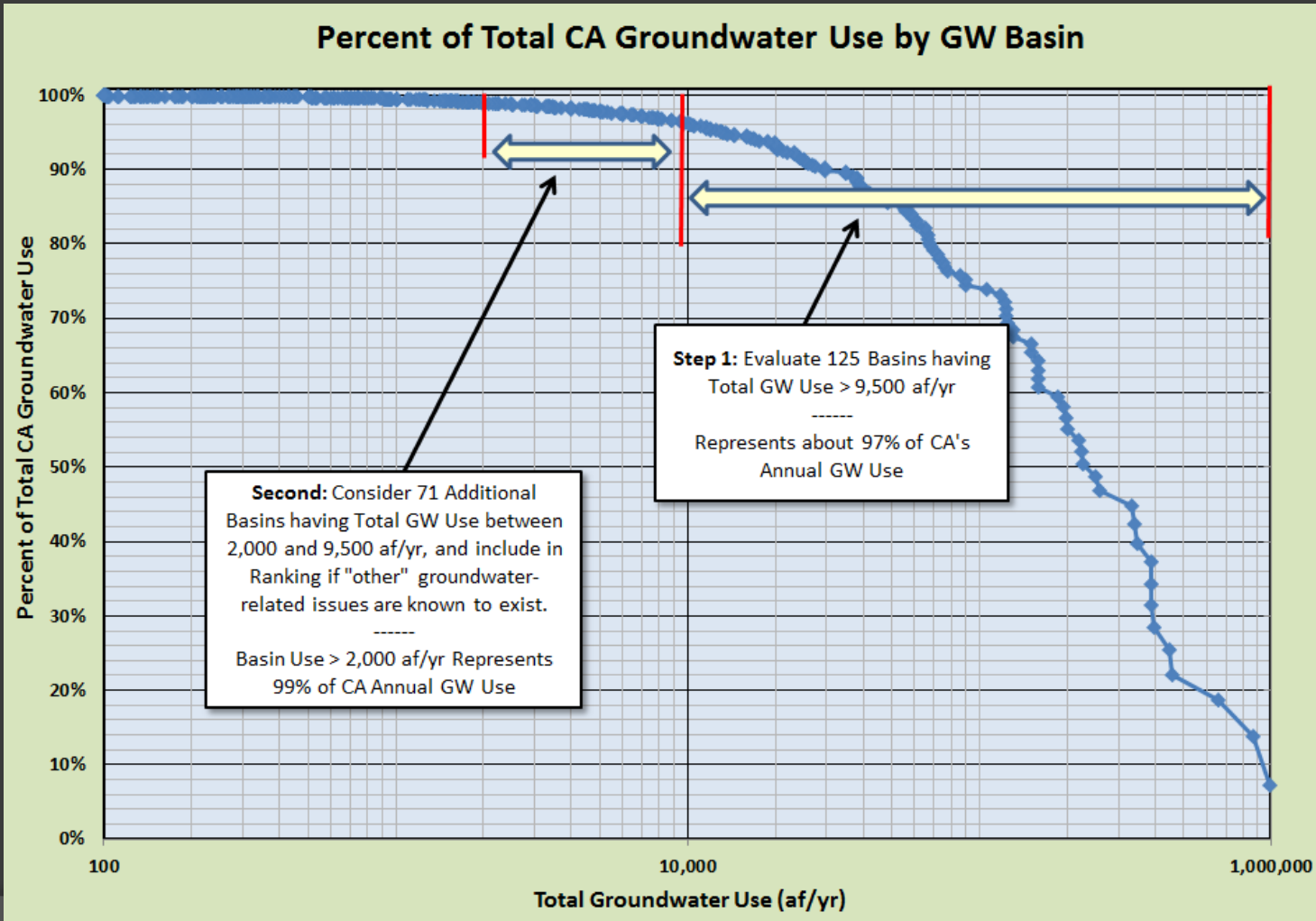




# CASGEM Basin Prioritization Process

*Initial Steps:* Statewide Assessment of GW Use by GW Basin

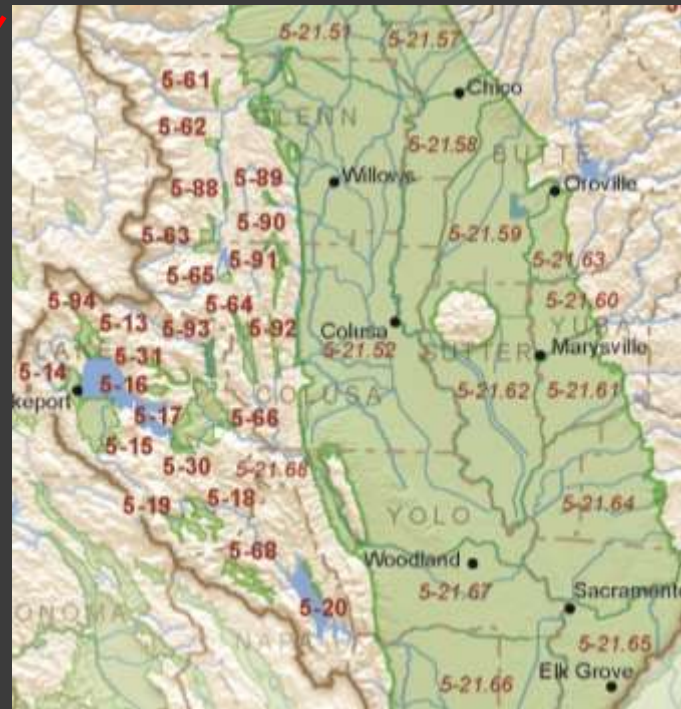
Consider Prioritization of all basins with GW Use  $\geq 2,000$  ac-ft/year



# CASGEM Basin Prioritization Process

Next Steps: Normalize Data by Basin Area

Groundwater Basin Size is  
Highly Variable



Data Component  
Units

GW Use = ac-ft/acre

Population = persons/sq-mi

Well Counts = wells/sq-mi

Irrigated Area = acres/sq-mi

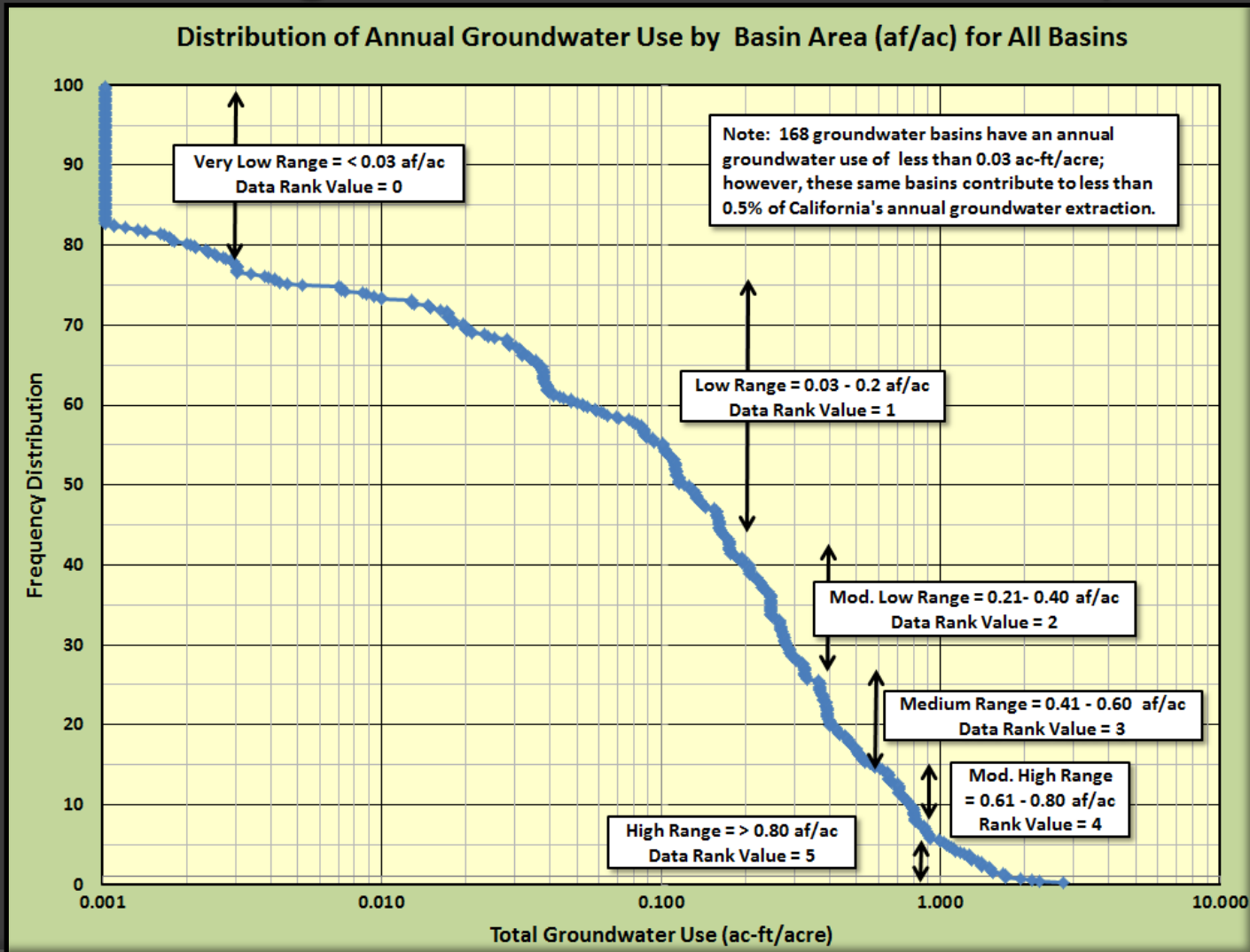




# CASGEM Basin Prioritization Process

Next Steps: Develop Data Distribution Ranking Ranges and Values

**Data Ranking Values = 0-5 for each Data Component**



**Data Ranges based on Distribution of data for each Data Component**

# CASGEM Basin Prioritization Process

**Next Steps: Develop Data Distribution Ranking Ranges and Values for Data Components 1 - 6**

**Data Ranking Values = 0-5 for each Data Component**

Data Component Ranking	Data Component Ranking Value	Data Components and Ranking Ranges						
		Population		PSW Density	Total Well Density	Irrigated Acreage	Groundwater Reliance	
		Density	Projected Growth				GW Use	% of Total Supply
		per sq-mi	%				ac-ft/acre	%
Very Low	0	< 7	< 0	< 0.01	< 0.01	< 0.1	< 0.3	< 0.1
Low	1	7 - 250	0 - 6.0	0.01 - 0.1	0.01 - 2.0	0.1 - 60	0.3 - 20	0.1 - 20
Moderately Low	2	251 - 1000	6.1 - 15	0.11 - 0.25	2.1 - 5.0	61 - 115	0.21 - 0.4	21 - 40
Medium	3	1001 - 2500	15.1 - 25	0.26 - 0.50	5.1 - 10.0	116 - 250	0.41 - 0.6	41 - 60
Moderately High	4	2501 - 4000	25.1 - 40	0.51 - 1.0	10.1 - 20	251 - 350	0.61 - 0.8	61 - 80
High	5	≥ 4000	≥ 40%	≥ 1.0	> 20	> 350	> 0.8	> 80%
Note: Population growth is percent growth from 2010 to 2030								

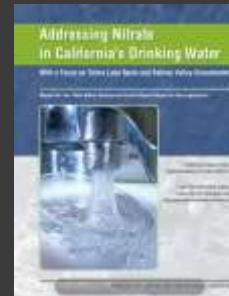
**Data Ranges based on Distribution of data for each Data Component**



# CASGEM Basin Prioritization Process

Next Steps: Assess Data Components 7 & 8  
“Documented Impacts” and “Other Information”

DWR Region Office Review of *Readily Available Information*  
Assigned a Value of 0-5 for “*Impacts*” and “*Other Information*”



# CASGEM Basin Prioritization Process

*Next Steps: Assess “Impacts” and “Other Information”*  
**Compile Data Component Scores and Ranking**

Basin --- Subbasin	Data Component Ranking Value										Overall Ranking		Impact Comments	Other Information Comments
	Population	Population Growth	Public Supply Wells	Total Wells *	Irrigated Acreage *	Groundwater Reliance			Impacts	Other Information	Overall Basin Ranking Score *	Overall Basin Priority		
						GW Use	Percent of Total Supply *	GW Reliance Total						
Sacramento Valley --- South American	3	3	4	5	3	2	3	2.1	3		21.1	High	From B118: Montgomery Watson (1997) listed seven sites within the subbasin with significant groundwater contamination. From Sac County GWMP: Overall decreasing groundwater level trend over past 50 years (~30ft).	
Sacramento Valley --- Yolo	2	3	3	5	5	5	3	3.6	1		20.1	High	Localized TDS problems preclude using gw for some M&I uses without treatment. Some subsidence in northeast of Davis and in northern Yolo.	

NOTE: \* Data component values were reduced by 25% due to data confidence, prior to calculating total GW basin ranking value.

Overall Basin Ranking = Population + Population Growth + PSW + (Total Wells x .75) + (Irr Acreage x 0.75) + {(GW Use + (GW % x .75))/2} + Impacts + Other

# CASGEM Basin Prioritization Process

**Next Steps:** Compile Data Component Scores and Rank Basins

*Statewide Breakdown by Hydrologic Region*

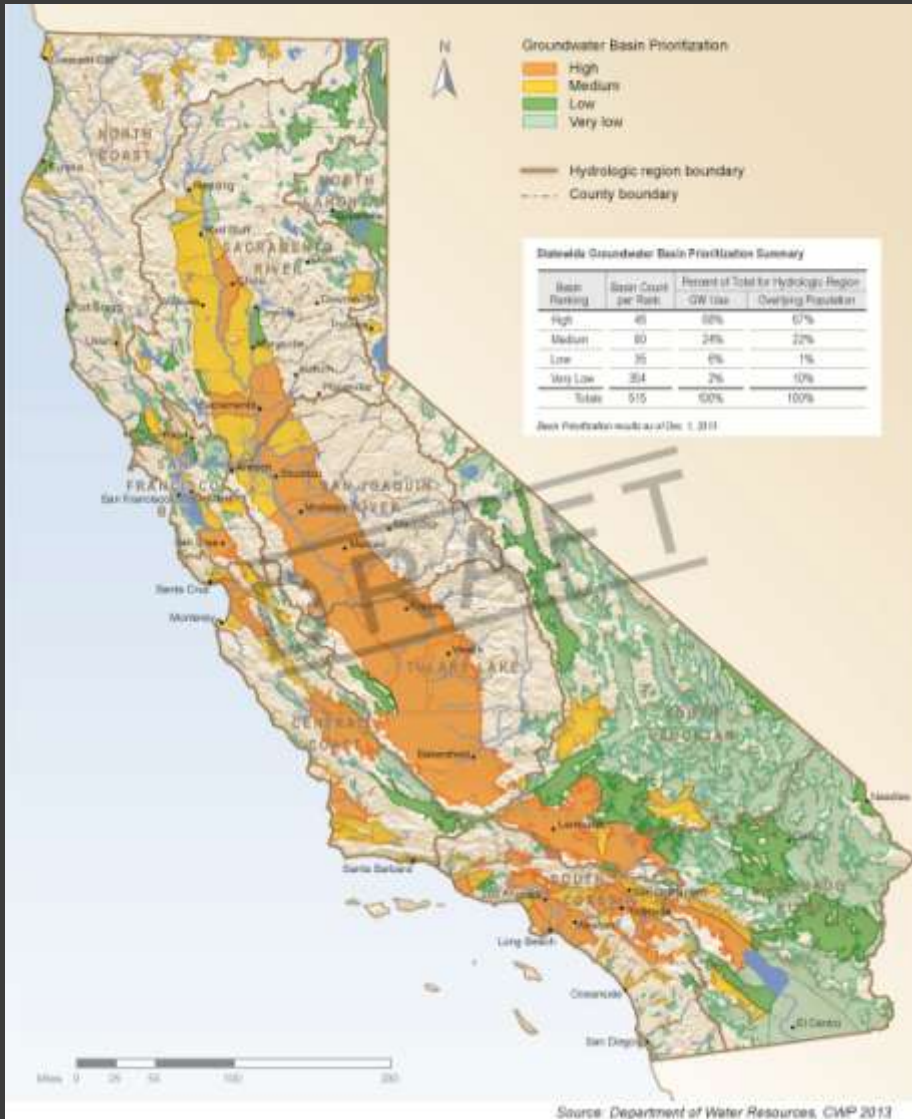
Hydrologic Region	CASGEM Groundwater Basin Priority by Ranking Range and Hydrologic Region				HR Basin Count	Percent of Total Groundwater Use and Overlying Population for High & Medium Ranked Basins	
	High priority	Medium priority	Low priority	Very Low priority		Overlying Groundwater Use *	Overlying Population *
	Ranking Range > 19.7	Ranking Range 12.6 - 19.6	Ranking Range 5.5 - 12.5	Ranking Range < 5.4			
North Coast	0	8	2	53	63	84%	74%
San Francisco	1	6	1	25	33	88%	63%
Central Coast	8	16	1	35	60	91%	96%
South Coast	14	22	5	32	73	96%	94%
Sacramento River	5	16	7	60	88	89%	97%
San Joaquin River	7	2	0	2	11	99%	99%
Tulare Lake	7	1	1	10	19	98%	98%
North Lahontan	0	2	2	23	27	9%	55%
South Lahontan	2	3	7	65	77	55%	94%
Colorado River	2	4	9	49	64	77%	65%
<b>Statewide</b>	<b>46</b>	<b>80</b>	<b>35</b>	<b>354</b>	<b>515</b>	<b>92%</b>	<b>89%</b>

**Note:** \* Estimated percentages are based on total groundwater use and population overlying all alluvial groundwater basins in the hydrologic region.



# CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



## Statewide Breakdown

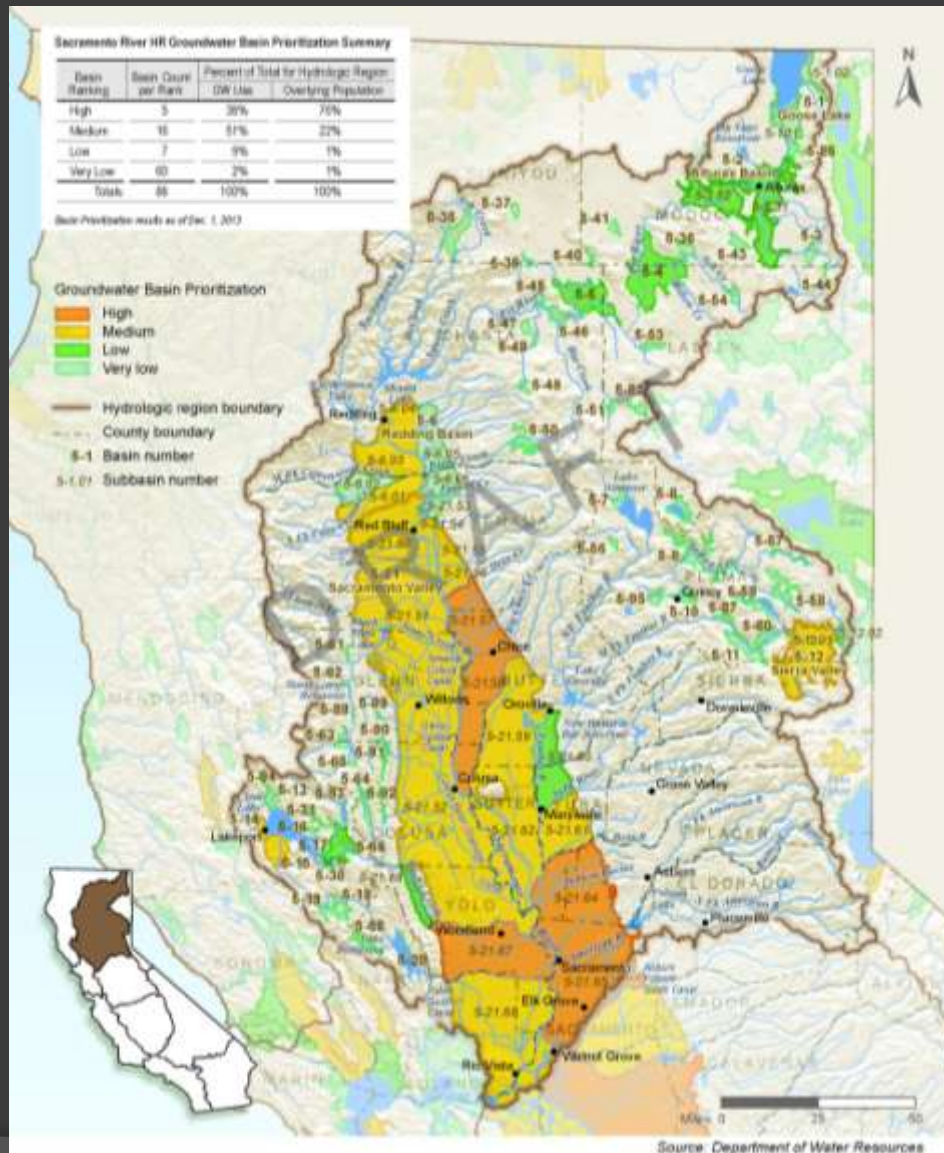
Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying Groundwater Basin Areas	
		Overlying GW Use	Overlying Population
High	46	68%	67%
Medium	80	24%	22%
Low	35	6%	1%
Very Low	354	2%	10%
Totals	515	100%	100%

126 High & Medium Priority basins cover ...

- 92% of California's annual groundwater pumping
- 89% of California's population (overlying the gw basins area)

# CASGEM Basin Prioritization Process

## Next Steps: Compile Data Component Scores and Rank Basins



## Sacramento River HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying Groundwater Basin Areas	
		Overlying GW Use	Overlying Population
High	5	38%	76%
Medium	16	51%	22%
Low	7	9%	1%
Very Low	60	2%	1%
Totals	88	100%	100%

21 High & Medium Priority basins cover ...

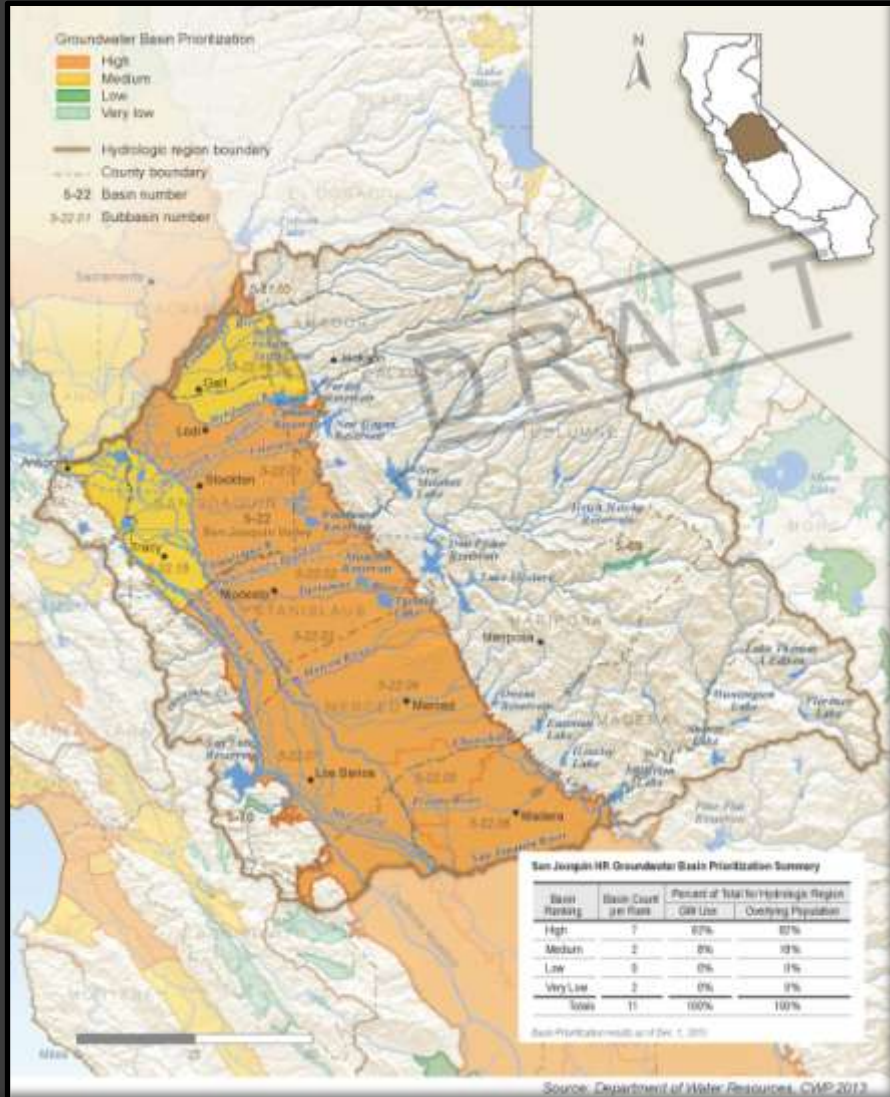
- 89% of Sacramento River HR's annual groundwater pumping
- 98% of Sacramento River HR's population

*Note:* GW Use and Population Percentages are for overlying GW basin areas



# CASGEM Basin Prioritization Process

**Next Steps:** Compile Data Component Scores and Rank Basins



## San Joaquin River HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying	
		Overlying GW Use	Overlying Population
High	7	92%	82%
Medium	2	8%	18%
Low	0	0%	0%
Very Low	2	0%	0%
Totals	11	100%	100%

9 High & Medium Priority basins cover ...

- 99% of HR's annual groundwater pumping
- 99% of HR's population

**Note:** GW Use and Population Percentages are for overlying GW basin areas



# CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



## South Coast HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying	
		Overlying GW Use	Overlying Population
High	14	66%	75%
Medium	22	30%	19%
Low	5	2%	1%
Very Low	32	2%	5%
Totals	73	100%	100%

36 High & Medium Priority basins cover ...

- 96% of HR's annual groundwater pumping
- 94% of HR's population

*Note: GW Use and Population Percentages are for overlying GW basin areas*

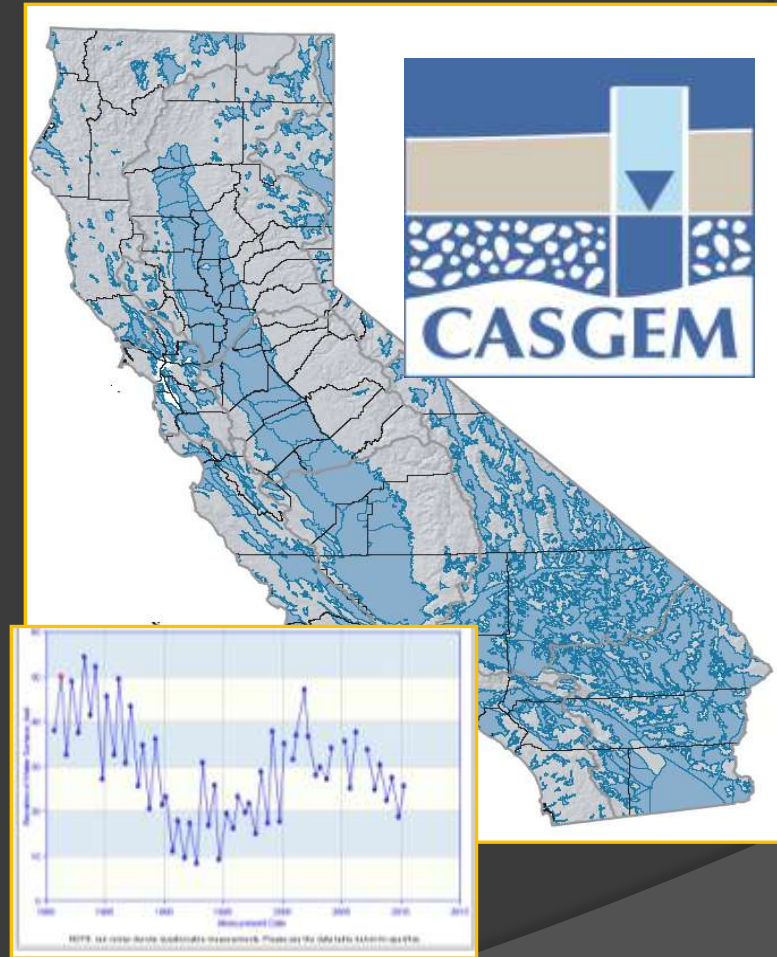
# CASGEM Basin Prioritization Process

*Where do we go from here?*



# OUTLINE

- CASGEM Overview
- Basin Prioritization
- Next Steps







# Basin Prioritization Results

- ⦿ Prioritization does not reflect basin management or monitoring
- ⦿ Preliminary Statewide Results
  - ❖ 46 High Priority Basins
  - ❖ 80 Medium Priority Basins
  - ❖ 35 Low Priority Basins
  - ❖ 354 Very Low Priority Basins
- ⦿ 75% are Low and Very Low Priority Basins
- ⦿ 25% are High and Medium Priority Basins
  - 92% of groundwater use, 89% of population overlying the groundwater basin
  - 75% are Low and Very Low Priority Basins







# How will the CASGEM Program use the Basin Prioritization?

- DWR will utilize the prioritized results and assess groundwater basins on a statewide scale.
- DWR will focus efforts on evaluating the status of groundwater level monitoring in High and Medium Priority groundwater basins where monitoring will have the greatest benefit.







# How else could Basin Prioritization be used?

- Promote informed decision making
- Provide a common understanding of the statewide significance of the 515 groundwater basins and subbasins
- Prioritize allocation of limited resources
- Identify and prioritize basins needing to improve groundwater management practices





# Next Steps for FY 13/14

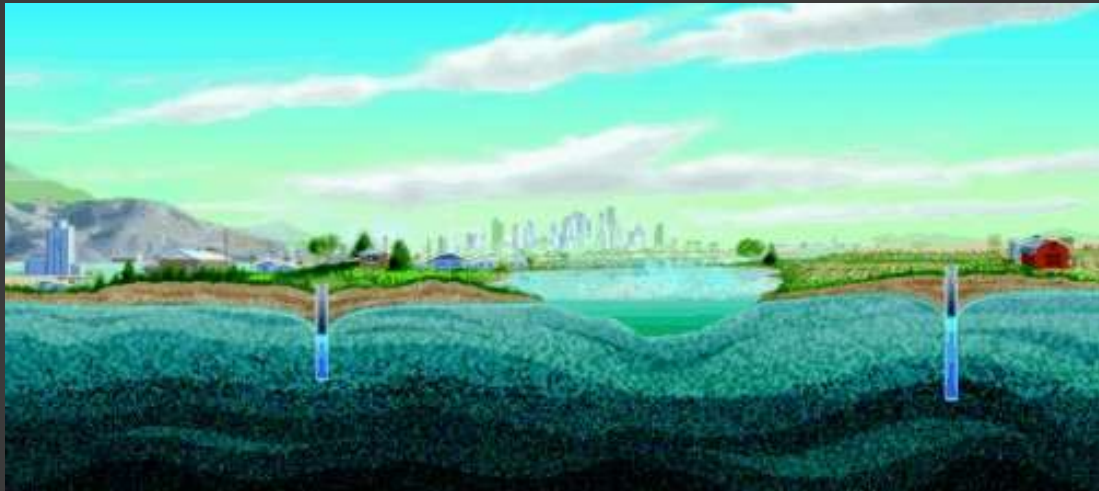
- Identify High and Medium Priority Basins that are not monitored and/or not designated with a Monitoring Entity.
  - Preliminary results:
    - 58% (73) of High and Medium Priority basins are monitored under CASGEM
    - 8% (10) of High and Medium Priority Basins are partially monitored under CASGEM
    - 34% (43) of High and Medium Priority Basins are not monitored under CASGEM





# Next Steps for FY 13/14

- Solicit and respond to comments on Prioritization Process and Basin Summary Data
- Finalize Prioritized Basin list - March 2014







# How will the CASGEM Program use the Basin Prioritization?

- A list of the High and Medium Priority basins without a CASGEM Monitoring Entity will be provided to the grants and loans programs at DWR, SWRCB, and DPH.
- Specific grant programs will determine eligibility for their respective grants with respect to the basin not being monitored under the CASGEM Program, as specified in the Water Code.





# Input Needed

## Q. What can you do to help the process ?

1. Review the basin prioritization process
2. Review where your basin falls within the Data Component range for...
  - Irrigated Acres
  - Groundwater Use
  - % of Groundwater of Total Supply
3. Review information for *Documented Impacts* and "*Other*" to see if DWR has captured the major groundwater related issues





# CASGEM Program Basin Prioritization Information

## **Q. What's the best method for reviewing the data ?**

1. Read the Online Basin Prioritization Materials:
  - Brochures...summarizes process and results
  - Maps...draft prioritization by Hydrologic Region
  - Report...describes methods and results
2. Review Data Summary Sheet for the basin(s) in your area.

**Basin Prioritization Materials are available online at**  
**[www.water.ca.gov/groundwater/casgem](http://www.water.ca.gov/groundwater/casgem)**

**Or contact the nearest DWR Region Office**







# Draft Basin Summary Sheets

## Review

- Shaded areas

- Impacts

- Other Information

### DRAFT

Hydrologic Region: North Coast  
North Region Office (NRO)  
Basin Area: 40446 acres (63.2 miles)  
2010 Population: 24588

Basin: SMITH RIVER PLAIN

Sub\_Basin: N/A

Basin Number: 1-1

Date: 12/30/2013

DATA COMPONENT RANKING VALUE TABLE

Data Component	Ranking Range	Units	Ranking Value	Confidence Adjustment	Average of Components	Adjusted Ranking Values
1. Population	251 - 1000	persons/sq-mi	2			2
2. Population Growth	6.1 - 35	percent	2			2
3. Public Supply Wells	0.51 - 1.0	wells/sq-mi	4			4
4. Total Wells	> 20	wells/sq-mi	5	3.75		3.75
5. Irrigated Acreage	61 - 115	acres/sq-mi	2	1.5		1.5
6. GW	GW Use	acre-foot/acre	2		2.5	2.5
Reliance	% of Total Supply	61 - 80	percent	4	3	
7. Impacts	—	—	0			0
8. Other Information	—	—	0			0
Overall Basin Ranking Score	12.6 - 19.7	—				15.8

#### Overall Basin Priority: Medium

Very Low Ranking Range	Low Ranking Range	Medium Ranking Range	High Ranking Range
0 - 5.4	5.4 - 12.5	12.6 - 19.7	> 19.7

#### Data Sources and Calculation Notes:

- Population: Dept. of Finance 2010 census data.
- Population Growth: Dept. of Finance 2010 census data projected to 2030.
- Public Supply Wells: Dept. of Public Health, 2012 Drinking Water Supply Database.
- Total Wells: DWR Well Master database.
- Irrigated Acreage: DWR 2005 land use data.
- Groundwater Reliance: DWR, 2005 land use data.
- Documented Impacts: DWR Region staff review of DWR Bulletin 118-2003, GWMPs, or other readily available published information.
- Other Information: DWR Region staff review of DWR Bulletin 118-2003, GWMPs, or other readily available published information.
- Data component values were reduced by 25% due to data confidence, prior to calculating total GW basin ranking value. Overall Basin Ranking = Population + Population Growth + PSW + (Total Wells x .75) + (Irr Acreage x 0.75) + ((GW Use + (GW % x .75))/2) + Impacts + Other

#### Notes on SMITH RIVER PLAIN Basin

\* Impacts: No impacts identified.

\*\* Other Information: None



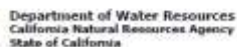


CASGEM  
Groundwater  
Basin  
Prioritization  
Process

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The California Water Code (§10933 and §12924) requires DWR to prioritize California's groundwater basins and subbasins (as identified in DWR's Bulletin 118 update 2003) and conduct groundwater basin assessments. As such, DWR developed the CASGEM Groundwater Basin Prioritization Process.

For more information please visit the  
CASGEM Program website:  
[www.water.ca.gov/groundwater/casgem](http://www.water.ca.gov/groundwater/casgem)



December 2013



**DRAFT**

Marketing Region: North Coast  
North Region (Africa) (N40)  
Radio Area: 8806 zone (SL2 series)  
1998/1999 season: 1998

(Date: 08/17/2024)  
 Sub: Grade: 6  
 Grade Number: 6  
 Item: 123456789

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Data Component	Ranking Range	Units	Ranking Value	Location Adjustment	Average of Components	Relative Ranking
1. Population	200 - 2000	persons/county	1	0	1	1.00
2. Population Density	0.0 - 1.0	persons/mi <sup>2</sup>	2	0	2	0.67
3. Median Income	0.00 - 1.0	\$/yr/household	3	0	3	0.33
4. Median Age	0.00 - 1.0	years/individual	4	0	4	0.00
5. Travel Time	1.00	minutes/individual	5	1.0	5.0	0.00
6. Unemployed Percentage	0.0 - 10.0	% of population	6	1.0	6.0	0.00
7. Size	0.00 - 100.00	square miles	7	0	7	0.00
8. Distance	0.00 - 100.00	distance from county seat	8	0	8	0.00
9. Distance to 1st Urban Supply	0.00 - 100.00	distance from county seat	9	0	9	0.00
10. Distance to 2nd Urban Supply	0.00 - 100.00	distance from county seat	10	0	10	0.00
11. Distance to 3rd Urban Supply	0.00 - 100.00	distance from county seat	11	0	11	0.00
12. Distance to 4th Urban Supply	0.00 - 100.00	distance from county seat	12	0	12	0.00
13. Distance to 5th Urban Supply	0.00 - 100.00	distance from county seat	13	0	13	0.00
14. Distance to 6th Urban Supply	0.00 - 100.00	distance from county seat	14	0	14	0.00
15. Distance to 7th Urban Supply	0.00 - 100.00	distance from county seat	15	0	15	0.00
16. Distance to 8th Urban Supply	0.00 - 100.00	distance from county seat	16	0	16	0.00
17. Distance to 9th Urban Supply	0.00 - 100.00	distance from county seat	17	0	17	0.00
18. Distance to 10th Urban Supply	0.00 - 100.00	distance from county seat	18	0	18	0.00
19. Distance to 11th Urban Supply	0.00 - 100.00	distance from county seat	19	0	19	0.00
20. Distance to 12th Urban Supply	0.00 - 100.00	distance from county seat	20	0	20	0.00
21. Distance to 13th Urban Supply	0.00 - 100.00	distance from county seat	21	0	21	0.00
22. Distance to 14th Urban Supply	0.00 - 100.00	distance from county seat	22	0	22	0.00
23. Distance to 15th Urban Supply	0.00 - 100.00	distance from county seat	23	0	23	0.00
24. Distance to 16th Urban Supply	0.00 - 100.00	distance from county seat	24	0	24	0.00
25. Distance to 17th Urban Supply	0.00 - 100.00	distance from county seat	25	0	25	0.00
26. Distance to 18th Urban Supply	0.00 - 100.00	distance from county seat	26	0	26	0.00
27. Distance to 19th Urban Supply	0.00 - 100.00	distance from county seat	27	0	27	0.00
28. Distance to 20th Urban Supply	0.00 - 100.00	distance from county seat	28	0	28	0.00
29. Distance to 21st Urban Supply	0.00 - 100.00	distance from county seat	29	0	29	0.00
30. Distance to 22nd Urban Supply	0.00 - 100.00	distance from county seat	30	0	30	0.00
31. Distance to 23rd Urban Supply	0.00 - 100.00	distance from county seat	31	0	31	0.00
32. Distance to 24th Urban Supply	0.00 - 100.00	distance from county seat	32	0	32	0.00
33. Distance to 25th Urban Supply	0.00 - 100.00	distance from county seat	33	0	33	0.00
34. Distance to 26th Urban Supply	0.00 - 100.00	distance from county seat	34	0	34	0.00
35. Distance to 27th Urban Supply	0.00 - 100.00	distance from county seat	35	0	35	0.00
36. Distance to 28th Urban Supply	0.00 - 100.00	distance from county seat	36	0	36	0.00
37. Distance to 29th Urban Supply	0.00 - 100.00	distance from county seat	37	0	37	0.00
38. Distance to 30th Urban Supply	0.00 - 100.00	distance from county seat	38	0	38	0.00
39. Distance to 31st Urban Supply	0.00 - 100.00	distance from county seat	39	0	39	0.00
40. Distance to 32nd Urban Supply	0.00 - 100.00	distance from county seat	40	0	40	0.00
41. Distance to 33rd Urban Supply	0.00 - 100.00	distance from county seat	41	0	41	0.00
42. Distance to 34th Urban Supply	0.00 - 100.00	distance from county seat	42	0	42	0.00
43. Distance to 35th Urban Supply	0.00 - 100.00	distance from county seat	43	0	43	0.00
44. Distance to 36th Urban Supply	0.00 - 100.00	distance from county seat	44	0	44	0.00
45. Distance to 37th Urban Supply	0.00 - 100.00	distance from county seat	45	0	45	0.00
46. Distance to 38th Urban Supply	0.00 - 100.00	distance from county seat	46	0	46	0.00
47. Distance to 39th Urban Supply	0.00 - 100.00	distance from county seat	47	0	47	0.00
48. Distance to 40th Urban Supply	0.00 - 100.00	distance from county seat	48	0	48	0.00
49. Distance to 41st Urban Supply	0.00 - 100.00	distance from county seat	49	0	49	0.00
50. Distance to 42nd Urban Supply	0.00 - 100.00	distance from county seat	50	0	50	0.00
51. Distance to 43rd Urban Supply	0.00 - 100.00	distance from county seat	51	0	51	0.00
52. Distance to 44th Urban Supply	0.00 - 100.00	distance from county seat	52	0	52	0.00
53. Distance to 45th Urban Supply	0.00 - 100.00	distance from county seat	53	0	53	0.00
54. Distance to 46th Urban Supply	0.00 - 100.00	distance from county seat	5	0	5	0.00

Cheryl Davis, *President, Madison*

Low Parking Temp.	Low Parking Temp.	Medium Parking Temp.	Hgt. Parking Temp.
0-5.4	5.4-12.5	12.5-16.7	>16.7

Public Response and Communication Issues

- [illegible]

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California Statewide  
Groundwater Elevation  
Monitoring Program

## CASGEM Overview and Next Steps

The California Department of Water Resources (DWR) implemented the California Statewide Groundwater Elevation Monitoring (CASGEM) Program in response to legislation enacted in the California Water Code as part of California's 2009 Comprehensive Water package.

CASGM establishes a permanent, locally managed program of regular and systematic groundwater level monitoring to track seasonal and long-term trends in groundwater elevations in all of California's 515 groundwater basins (as identified in DWR's Bulletin 118 update 2003) and makes this information readily available to the public.

The California Water Code (§10933 and §12924) requires DWR to prioritize California's groundwater basins and subbasins and conduct groundwater basin assessments. As such, DWR developed the CASGEM Groundwater Basin Prioritization Process.

For more information please visit the  
CASGEM Program website:  
[www.water.ca.gov/groundwater/casgem](http://www.water.ca.gov/groundwater/casgem)



December 2013





# Workshop Next Steps

- Public comments due February 24, 2014
  - ❖ Review basin prioritization process
  - ❖ Review basin summary sheets with basin ranking
  - ❖ Provide new or pertinent information if available for groundwater use, irrigated acreage, % of total supply, impacts, other information
- Submit written comments to DWR  
[Brett.Wyckoff@water.ca.gov](mailto:Brett.Wyckoff@water.ca.gov)







## Future Plans (Contingent on Funding)

- Continue designation of Monitoring Entities
- Evaluate extent of groundwater monitoring
- Using prioritization results, collaborate with local agencies to conduct groundwater basin assessments
- Identify regional trends
- Identify basins subject to overdraft





# Contacts

## HQ – Sacramento

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# QUESTIONS?

[www.water.ca.gov/groundwater/casgem](http://www.water.ca.gov/groundwater/casgem)

## Summary

The CASGEM Groundwater Basin Prioritization Process (Basin Prioritization) was developed as a statewide ranking of groundwater basin importance, with a focus towards implementation of the CASGEM Program. Evaluation of groundwater basins at a statewide scale does not necessarily capture the local importance of the smaller size or lower-use groundwater basins.

## Draft Basin Prioritization Map (as of December 1, 2013)

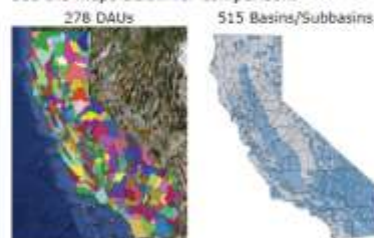


## Statistics (as of December 1, 2013)

- 126 High and Medium priority basins (46 High and 80 Medium)
- 58% of High and Medium priority basins are currently fully monitored under CASGEM
- An additional 8% of High and Medium priority groundwater basins are partially monitored under CASGEM

## Challenges

Most of the datasets are not collected or stored at the groundwater basin scale. For example, groundwater use is generally reported in Detailed Analysis Units (DAUs). This required translation to groundwater basin area. See the maps below for comparison.



## Contact DWR

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California Statewide  
Groundwater Elevation  
Monitoring Program

## CASGEM Groundwater Basin Prioritization Process

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Department of Water Resources  
California Natural Resources Agency  
State of California

December 2013







*Thank you!*

*Department of  
Water Resources*



**Association of  
California Water Agencies**

*Since 1910*

Leadership • Advocacy • Information • Service

